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# Shipping Maine Potatoes to Eastern Markets



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PREFACE

At the request of the Maine Potato Commission, the U.S. Department of Agriculture's Office of Transportation conducted this study in cooperation with the Cooperatives Program of Economics, Statistics, & Cooperatives Service.

Maine growers and shippers are vitally concerned with availability of rail and truck equipment to transport fresh and processed potatoes to major markets throughout the Eastern United States.

There has been an increasing decline on the part of the railroads in both service and number of mechanical refrigerated cars. In addition, due to increasing replacement costs of trucking equipment, high fuel costs, restrictions on load limits in certain States, and the scarcity of backhaul loads moving into the area, there has been a reported decline in the number of independent trucks available for movements to eastern markets.

Maine growers and shippers are convinced they need to explore alternative shipping methods to supplement independent owner-operator truckers currently hauling their products.

Based on the request, study objectives were designed to:

A. Develop a profile of the present transportation and handling system.

B. Evaluate service requirements for shippers, receivers, and products.

C. Develop a best estimate of total truck, water, rail, and piggyback operating costs between the Maine and major eastern markets.

D. Determine the freight rate, service level, and volume required to offset the costs of owning (or leasing) and operating a private fleet of highway trucks, and/or trailers for use in trailer-on-flatcar (TOFC) rail service.1/

E. Develop an organizational structure to implement a feasible transportation system.

1/ In this report the terms trailer-on-flatcar (TOFC) and piggyback are used interchangeably.

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## SUMMARY AND RECOMMENDATIONS

This study was conducted in response to a request from the Maine Potato Commission. Maine potato shippers are vitally concerned about their inability to find available rail and truck equipment to move potatoes to market.

Data on shipping flows gathered during the study showed:

--The Bangor and Aroostook Railroad (BAR) shipped more than 25,000 carloads of potatoes during the 1964-65 season and only 29 carloads from the 1978-79 season.

--The BAR recently discontinued publishing rates for fresh potatoes.

--The last major switch from rail to truck occurred during the 1977-78 season.

--From 1972-1978 U.S. population has grown by 9.7 million, and consumption of fresh potatoes has declined from 57.4 pounds to 48.8 pounds. (An overall loss of 10.6 percent in the fresh market.)

--During these same 6 years the number of loads of fresh potatoes moving from Maine to market decreased by 35 percent (from 29,900 to 19,412).

--Over 90 percent of Maine potatoes are moved to market in the 7 months of November through May.

--Eight eastern seaboard States represent 80 percent of the Maine potato volume.

--Opportunities exist for coordinating shipments with Florida's peak season which matches the potato season. Because their peak period occurs in Maine's slow period, California shippers can share or lease equipment during the off-season.

Information and data gathered from chain stores, potato distributors, railroads, trucking companies, and leasing companies indicated:

--Unless the independent trucker has some kind of backhaul, the current rate paid out of Presque Isle does not cover the estimated truck operating cost.

--Most receivers carry only 1 to 3 day's stock of potatoes in the warehouse.

--Reliability of scheduled arrival time is more important to receivers than time in transit.

--Receivers in the major market areas selected for interviewing were not aware of any shipping problems with potatoes.

--Most receivers indicated they would not return to the railroads because of service problems or that they would go back only if they could be assured of fast, reliable service.

--Current shipping rates of independent truckers are less than those of the alternatives explored--coastal vessel, forward stocks near market areas supplied in trainload quantities, single-car and unit-train piggyback service, private trucking, and cooperatively operated truck fleets.

--The most likely alternatives for improving service include:

1. Increasing the rate paid to independent truckers.

2. Reducing or eliminating the truck brokerage fee.

3. Forming an agricultural cooperative; and

a. Contracting with one or more trucking companies.

b. Joining a cooperative trucking company.

c. Creating a cooperative trucking company.

Only by joining together can shippers accumulate sufficient volume to assure operating efficiencies and warrant the trucker's interest in providing the kind of service shippers and receivers require.

Alternatives listed under item 3 above should be considered as only supplemental to the current shipping system. If, after operating for a time, experience shows the new system to be successful from both a cost and service standpoint, it then should be expanded.

# SHIPPING MAINE POTATOES TO EASTERN MARKETS

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In recent years potatoes moving from Maine to eastern markets have switched from rail to truck transportation service. The sharp decline in railcar loadings of Maine potatoes has continued to the point where the Bangor and Aroostook Railroad Co. (BAR) shipped only 29 railcar loads of potatoes from the 1978-79 season. During the 1964-65 season it shipped 25,481 carloads.

Today, the BAR does not even publish a rate for fresh potatoes. Aroostook County, Maine, is the fourth largest potato-producing district in the United States and the BAR is the only railroad serving this county, so it is clear that the railroads essentially have dropped out of the potato-transporting business in the State of Maine.

The entire burden for moving Maine potatoes now rests on independent truckers, who have not been enthusiastic about handling fresh potatoes at the offered rates. Some factors that contribute to periodic shortages of trucks include the lack of backhauls and seriously increasing truck fuel, maintenance, and equipment replacement costs. In addition, the independent operators must pay a truck brokerage fee that varies from 6 to 10 percent, depending on whether they receive advances.

Another factor contributing to the truck shortage is that truck-operating cost information is more readily available to the independent owner-operator. This information has increased trucker awareness of what is termed route profitability, and many truckers are discontinuing unprofitable routes that include a great many empty return miles.

Shippers are concerned about the loss of rail service and complete dependence on a single mode transportation system. That system, trucking, faces some difficult decisions due to decreasing fuel availability and rapidly increasing costs. Therefore, shippers need to evaluate feasible shipping alternatives.

From 1972 to 1978 total annual per capita consumption of potatoes increased from 119.4 pounds to 123.9 pounds nationwide. This, added to a 9.7-million increase in population, would indicate a healthy potato industry. However, during this same period, the number of loads of fresh potatoes moving from Maine to market decreased by 35 percent (from 29,900 to 19,412).

We recognize that the increase in per capita consumption during this period was in frozen potatoes and that

1/ Office of Transportation, U.S. Department of Agriculture, Washington, D.C.

it was at the expense of the fresh potato market. Table 1 shows that from 1972 to 1978 per capita consumption of fresh potatoes decreased by 15 percent. When added to the population increase of 9.7 million in the same period, the result is a net 10.6 percent decrease nationwide in the consumption of fresh potatoes. This explains only a part of the 35-percent drop in shipments from Maine.

It is not known what part of this 35-percent market decline in fresh Maine potatoes should be attributed to transportation problems, marketing, and/or production considerations. However, the market system will not function without the support of reliable transportation. The Federal-State marketing improvement program of USDA's Agricultural Marketing Service currently is evaluating the marketing system, and any problems will be treated in that program.

This report evaluates shipping alternatives which might best provide the needed transportation service and help maintain a competitive balance between modes.

Table 1--Potato consumption per person, farm wt. (lbs.)

| Year | Total | Fresh | Frozen | Chips | Dehy | Canned |
|---|---|---|---|---|---|---|
| 1970 | 117.5 | 58.3 | 27.7 | 17.7 | 11.8 | 2.0 |
| 1971 | 118.7 | 56.8 | 30.3 | 17.3 | 12.1 | 2.2 |
| 1972 | 119.4 | 57.4 | 30.6 | 17.0 | 12.3 | 2.1 |
| 1973 | 116.8 | 51.9 | 33.2 | 16.6 | 12.8 | 2.3 |
| 1974 | 114.3 | 48.4 | 33.0 | 16.1 | 14.5 | 2.3 |
| 1975 | 122.1 | 55.0 | 34.7 | 15.9 | 14.5 | 2.0 |
| 1976 | 116.4 | 51.2 | 36.9 | 16.2 | 10.1 | 2.0 |
| 1977 | 121.7 | 54.0 | 39.9 | 16.0 | 9.3 | 2.6 |
| 1978 | 123.9 | 48.8 | 43.9 | 17.5 | 11.4 | 2.3 |

Source: Economics, Statistics and Cooperatives Service, USDA.

Table 2--Total truck and rail shipments from Maine, 55,000-pound load equivalents

| Season | Truck | Percent | Rail | Percent | Total |
|---|---|---|---|---|---|
| 1972/73 | 25,031 | 83.7 | 4,869 | 16.3 | 29,900 |
| 1973/74 | 21,080 | 82.8 | 4,388 | 17.2 | 25,468 |
| 1974/75 | 31,194 | 93.3 | 2,229 | 6.7 | 33,432 |
| 1975/76 | 24,568 | 84.2 | 4,607 | 15.8 | 29,175 |
| 1976/77 | 22,469 | 84.1 | 4,261 | 15.9 | 26,730 |
| 1977/78 | 21,848 | 98.8 | 270 | 1.2 | 22,118 |
| 1978/79 1/ | 19,383 | 99.9 | 29 | 0.1 | 19,412 |

1/ Preliminary.

Table 3--Seasonality of truck shipments of Maine potatoes, 55,000-pound loads

| Month | Loads | | |
|---|---|---|---|
| | 1976/77 | 1977/78 | 1978/79 |
| July-August | 237 | 154 | 118 |
| September | 577 | 421 | 375 |
| October | 1,091 | 714 | 840 |
| November | 2,301 | 1,723 | 1,636 |
| December | 2,485 | 2,518 | 1,930 |
| January | 3,267 | 2,842 | 2,679 |
| February | 3,084 | 2,805 | 2,565 |
| March | 3,058 | 3,396 | 2,918 |
| April | 3,100 | 3,195 | 3,467 |
| May | 2,571 | 3,177 | 2,745 |
| June | 698 | 903 | 110 |
| Total | 22,469 | 21,848 | 19,383 |

## SHIPPING PATTERNS

Data on shipping flows and seasonality were taken from Federal-State market news service reports published by the U.S. Department of Agriculture and Maine Department of Agriculture.

Table 2 shows that the railroad's share of potato shipments from Maine dropped from 16.3 percent in 1972/73 to only one-tenth of 1 percent in 1978/79.

Table 3 shows the heavy shipping period for Maine potatoes runs from November through May.

There appears to be a trend toward a more concentrated shipping season. Following is a summary of the seasonal trend.

| 7 months--November - May | Percent of total truck shipments |
|---|---|
| 1976-77 | 83 |
| 1977-78 | 90 |
| 1978-79 | 93 |

The peak shipping season for Maine potatoes coincides perfectly with the peak shipping season in Florida. This means there are many good opportunities to improve equipment utilization by working with shippers in Florida on north-south movements. This can help hold down transportation costs. The California season is another important peak period. It starts about mid-April and runs to mid-October. By working with the California shippers, transportation equipment used for potatoes during the winter months then can be used during the summer months for California fruit and vegetable shipments.

Table 4 lists the average 1977-78 and 1978-79 annual receipts for the major truck markets, by State, in descending order.

The top 8 States consume 80 percent of the total Maine potato production.

USDA's Agricultural Marketing Service lists fruit and vegetable unload statistics for 41 cities. A total of 5,377.8 loads (55,000 pounds) of Maine potatoes was picked up at these cities. Appendix table 1 lists the cities and the number of loads by month for 1978-79.

Table 4--Principal truck destinations by State for Maine potatoes, 55,000-pound loads, 1977-78 and 1978-79

| Destination | Average receipts |
|---|---|
| | Loads |
| Massachusetts | 4,340 |
| New York | 2,606 |
| Pennsylvania | 2,385 |
| New Jersey | 2,209 |
| Florida | 1,486 |
| Connecticut | 1,252 |
| Maine | 1,233 |
| Maryland | 1,058 |
| Rhode Island | 649 |
| Ohio | 573 |
| North Carolina | 535 |
| Virginia | 406 |
| Delaware | 399 |
| South Carolina | 354 |
| New Hampshire | 253 |
| West Virginia | 235 |
| Georgia | 204 |
| Washington, D.C. | 120 |
| All others | 318 |
| Total | 20,615 |

Source: Agricultural Marketing Service, USDA.

## AVAILABILITY OF TRANSPORTATION EQUIPMENT

The number and types of transportation equipment available will influence alternative shipping programs. New concepts also must be considered in any program that might be developed.

According to the Association of American Railroads (AAR), the refrigerator cars shown in table 5 were owned or leased and in service as of January 1, 1975 through 1979.

While the national fleet of railroad-owned or leased refrigerated cars remained fairly constant, the BAR actually disposed of its refrigerated fleet (table 6).

The in-service flatcars available for trailer-on-flatcar/container-on-flatcar (TOFC/COFC) use are shown in Table 7.

These numbers include, under the private ownership column, Trailer Train's fleet of flatcars. They also include equipment leased by the railroads.

For 1975, the figures indicate a drop in railroad-owned flatcars accompanied by a sharp increase in privately owned cars. This was partly because a portion of the railroad fleet was transferred to the private fleet column. The railroad fleet continued to decline through January 1, 1978. At that time the trend was reversed and the railroads began adding more TOFC/COFC flatcars to their fleet. The privately owned fleet also showed a marked increase on January 1, 1979, indicating a growing confidence in TOFC/COFC operations. It also indicates that as far as flatcar-equipment availability is concerned, a TOFC shipping program would be based on an improving situation.

The AAR shows the following numbers of railroad-owned, leased, and/or controlled refrigerated piggyback trailers as of January 1, 1973 through 1979. Fruit Growers Express and Pacific Fruit Express trailers are not included.

| Year | Refrigerated trailers |
|---|---|
| 1973 | 9,141 |
| 1974 | 8,481 |
| 1975 | 6,565 |
| 1976 | 4,431 |
| 1977 | 2,809 |
| 1978 | 2,441 |

Considering how few there are and the sharp drop in the number of railroad-owned refrigerated trailers, it is obvious that any new perishable piggyback shipping program will have to depend on shipper-owned trailers. More recent numbers, as listed in the Official Equipment Register, show that as of the release of this report, the trend has been reversed. On November 1, 1978 there were 2,881, and May 1, 1979 there were 3,061 refrigerated trailers owned or leased by railroads.

Table 5--Refrigerated railroad cars owned or leased and in service, January 1, 1975-1979 1/

| Year | Mechanical refrigerators | All others | Total |
|---|---|---|---|
| 1975 | 19,573 | 52,649 | 72,222 |
| 1976 | 18,720 | 57,504 | 76,224 |
| 1977 | 18,278 | 59,614 | 77,892 |
| 1978 | 18,387 | 57,504 | 75,891 |
| 1979 | 18,405 | 53,302 | 71,707 |

1/ Source: Association of American Railroads.

Table 6--Refrigerated cars owned and operated by the Bangor and Aroostook Railroad, January 1, 1975-1979 1/

| Year | Cars owned and operated |
|---|---|
| 1975 | 1,279 |
| 1976 | 1,199 |
| 1977 | 1,167 |
| 1978 | 653 |
| 1979 | 579 |
| Oct. 1, 1979 | 0 |

1/ Source: Association of American Railroads.

Table 7--Flatcars available for TOFC/COFC service, January 1, 1974-1979 1/

| Year | Railroad-owned | Privately owned | Total |
|---|---|---|---|
| 1974 | 10,618 | 30,362 | 40,980 |
| 1975 | 6,918 | 38,460 | 45,378 |
| 1976 | 6,046 | 39,218 | 45,264 |
| 1977 | 5,885 | 39,140 | 45,025 |
| 1978 | 5,819 | 39,864 | 45,683 |
| 1979 | 7,106 | 41,430 | 48,536 |

1/ Source: Association of American Railroads.

## NEW CONCEPTS IN PIGGYBACK OPERATIONS

Bi-Modal Corporation's RoadRailer is a new innovation in freight hauling which merits watching. RoadRailers are bimodal freight trailers that can be moved over highways by truck tractors, and over rails by locomotives in special trains. The RoadRailer has two sets of wheels, one used on the highway and the other on rails. The conversion is done automatically and it takes about 3 minutes to disconnect the RoadRailer from a train, connect it to a truck tractor, and start the highway move. While the RoadRailer is on the highway, the rubber-tired wheels are locked down and the rail wheels are locked in the up position. For rail use, the rail wheels are locked down and the highway wheels are up.

The advantages of this type of operation include, according to BiModal Corporation: (1) a 64-percent reduction in train weight; (2) a 28-percent reduction in terminal investment; (3) a 44-percent savings in fuel consumption over rail, and 64 percent over highway operations; (4) a very rapid terminal operation; and (5) great flexibility in highway pickup-and-delivery service.

The RoadRailer is expected to go into the test/commercial stage in the summer of 1980, so it may be some time before it is available for general use. Another factor that must be considered is that the RoadRailer is designed to operate only in special RoadRailer trains. Since it cannot be put into service with other cars, scheduling must be considered carefully.

There are currently a number of low-profile cars, either in the development stage or newly on line. Some of these include:

1. Youngstown Steel recently concluded an arrangement to build the Paton low-profile flatcar patterned after the European TOFC car. None are operational as yet.

2. The Santa Fe Railroad now has 11 of its 10-pack lightweight low-profile units in service and is building 43 additional units. These may have limited application to refrigerated piggyback operations as the overall length of the trailers is limited, and refrigeration equipment would reduce it further.

Another consideration in using these flatcars with refrigerator trailers is that the 10 cars are tied together permanently, and when 1 of the trailer's cooling or heating units fails, it cannot be cut out of the train, and all 10 must be set aside while the 1 is being repaired.

3. Trailer Train has a new lightweight low-profile prototype now in the test stage. It consists of two 31 1/2-inch high, 48-foot cars, with single-axle trucks, permanently tied together by a drawbar.

4. The Budd Company also is working on a lightweight, low-level intermodal car.

Clearly, there is a great deal of intermodal-development activity. Fuel and other savings obtained from a much improved ratio of freight to total weight have caused this trend to lightweight cars.

The purpose of the low-profile car is to overcome railroad height-clearance problems, particularly in the East. A standard TOFC flatcar is 3 feet high. It carries a 13-foot 6-inch-high trailer on top, giving a total height of 16 feet 6 inches. There are a number of overpasses, bridges, and tunnels which have overhead clearances as low as 15 feet 6 inches. This is particularly true in the New York and Baltimore areas. The low-profile cars, when operational, will not need to be routed around these low-clearance points.

## SERVICE REQUIREMENTS

Ten of the larger fresh-potato receivers from Massachusetts to Florida reported the following:

1. Receivers carry from 1- to 3-day's stock of potatoes in the warehouse.

2. Reliability of arrival time is of the utmost importance. One receiver indicated he scheduled his arrivals to the hour.

3. Two repackers recently discontinued handling Maine potatoes because of freight and handling costs, plus a 7- to 8-percent loss from bruises, cuts, size, and washing. The problem of excessive freight charges came about when the freight cost from Presque Isle to the repacker was added to the freight cost from the repacker to final destination; it added up to more than the through freight from Presque Isle direct to destination.

4. Only one receiver indicated that he occasionally received potatoes late because of truck shortages. One other indicated that he was beginning to have problems. Six receivers indicated no problem, 1 indicated never, and 1 indicated never in the last 40 years.

5. Four of the receivers indicated they would not go back to either railcars or piggyback because of service problems (one indicated he wanted the flexibility of truck transportation). One reported that he felt he would be forced to go back to rail (either piggyback or refrigerator car) because of the energy shortage. The balance indicated they would go back only if they could be assured of fast, reliable service. One indicated he would expect overnight service to Boston, and another indicated anything beyond 3 days to Philadelphia should be at a reduced rate.

6. Only three of the receivers mentioned truck rates, and they indicated the rates were too low.

Most surprising was that receivers did not perceive there was a transportation problem. Since only large receivers in the major markets were questioned, it is possible the problem does not exist in the more populated areas, but only in the out-of-the-way places off the main routes.

Another possibility is that since potatoes are sold only on a delivered basis, the receivers are not familiar with the shipper's problems. However, it does show that, at least in the major markets, the problem of truck availability has not affected larger receivers.

In a recent study covering the lettuce movement out of California to the Midwest and Northeast markets by independent truckers, equipment shortages were perceived as a critical problem.

The more important transportation differences between the two studies are:

1. Lettuce is sold FOB west coast packinghouse, placing responsibility on the buyer to arrange transportation and pay the freight bill.

2. Freight charges to Chicago from Salinas varied in 1 year from as low as $1,200 a load up to $2,200. We found no such fluctuations on the potato shipments.

Because of higher costs, receivers reduced their inventories to only a 1- to 3-day supply. This has created a very short inventory cycle which demands, and must have, a highly dependable transportation system to service it. Even infrequent delays of only 1 to 2 days in delivery can force receivers to

double their potato inventory, to be assured supplies when needed. Even the warehouses of the largest distributors do not have sufficient space to double inventories. Therefore, service and reliability of arrival time are of utmost importance to receivers. Speed, or rapid cycle time, from placing the order to arrival, is desirable (i.e. first or second morning), as it allows receivers to reduce their safety stocks. However, third or fourth morning is acceptable, if it is reliable, because the extra time can be added to the inventory order cycle. If orders arrive in 2 days one time and 4 days the next time, the only way this can be covered is by doubling the inventory. This is not acceptable to most receivers, as it is too costly. Even more important, in most cases there is not room in the warehouse to do this.

In summary, receivers were more interested in reliability of scheduled arrival time than they were in either cost or rapid service. This means that if Maine is to regain or even hold its market position it must provide dependable arrival schedules.

## Rail Service to Potato Shippers

The Bangor and Aroostook Railroad, incorporated February 13, 1891, primarily provides rail service to Aroostook County and much of northeast Maine. A considerable portion of the trackage consists of light-density branchlines which penetrate the lumber- and potato-producing areas of that region. While the Bangor and Aroostook handles a variety of products including forest products, prior to 1933 potato products comprised nearly half of total tonnage handled. The ratio of potato tonnage to entire tonnage handled dropped dramatically as the Bangor and Aroostook diversified into the carriage of other products. Prior to World War II, railroads were the primary carrier of potatoes to markets out of State. With the advent of the interstate highway system and development of the diesel engine, truck carriage expanded and became the primary mover of Maine potatoes. In crop year 1963-64, 28 percent of Maine potatoes went to market by rail. Ten years later the railroads carried only 17.2 percent of Maine potatoes to market. This last crop year, 1978-79, a negligible 0.06 percent of Maine potato traffic went by rail.

The decline in potato rail movements can be attributed to the inability of railroads to compete with motor carriers on a cost-and-service basis. High costs of rail service to potato shippers are related directly to the maintenance of an extensive branchline-collection system and the timing of potato shipments. Maine potatoes are marketed primarily in the winter, after the potatoes produced farther south have been consumed. The heaviest Maine shipments are made from December to May. In Aroostook County, snow, subzero temperatures, and other adverse weather conditions impede a constant flow of revenue potato traffic at reasonable cost during the peak market

period. The rail competitor, independent trucking, though charged for highway use, may not pay the full costs of the use, and is certainly not immediately impacted by weather damage to the right-of-way.

The Bangor and Aroostook was fully aware of the inroads the motor carriers were making into the potato market. In 1949-51, the BAR sought to increase its ownership of refrigerator cars and reduce its potato rates. It added 324 refrigerator cars to its fleet and reduced the rates to New England, eastern New York, and eastern Pennsylvania by $.03 to $.15 per hundredweight. By 1957, the refrigerated-car fleet increased to 1,371 cars and another rate reduction was filed in that year.2/ By that time, independent truckers were carrying nearly three-quarters of Maine potatoes shipped. Rail transport had become a secondary means of shipment. In order to meet the demand when motor carriage was not available, the BAR had to keep refrigerator cars inspected and maintained. The cost of keeping a supply for peak demand only is high because the probability of using the equipment is quite low. For this reason, and because the cars were used primarily for potatoes, the BAR sold or retired most of its regrigerated-car fleet and devoted only 30 cars to this service last season.

As the total volume and modal shares of rail traffic in the United States have declined, so has the service. Because traffic-generating railroads generally depend on other railroads to deliver a shipment, service often suffers. The greater the number of interchanges, the greater lack of control over service. The initiating railroad cannot assure delivery within a time frame demanded by the shipper. In the case of Maine potato rail shipments, 3 railroads must handle the traffic to its closest large market, Boston, a distance of 443 rail miles.

In order to assess the possibility of rail service effectively competing again with motor carriers for a significant share of the potato traffic, it is important to separate the controllable from the uncontrollable forces. In the short run, with the present regulatory, legislative, and rail labor-management climate unchanged, little can be done to change:

1. The inequities in Federal and State subsidies to the competing modes, if in fact they do exist.
2. The high cost of product shipment due to seasonal weather extremes.

Avenues that offer some hope of railroads effectively competing and that should be explored are:

1. Reduction of the light-density branchline collection system and placement of strategic rail-loading facilities for shippers.
2. Commitment by potato shippers either by contracts or purchase of rail-dedicated equipment. This would insure a more consistent demand for rail services.
3. Reduce interchange delays and lack of control through extensive blocking or unit-train arrangements.

2/ Moody's Investor Service, Moody's Transportation Manual (New York, 1974).

AVAILABLE RAIL OPTIONS

Single-Refrigerated Railcar Service

Recently, rail movements of Maine potatoes have been exclusively single-car shipments in refrigerated cars, but the BAR has now discontinued that service. Problems encountered by shippers, receivers, and carriers were mentioned earlier. In addition, many receivers have located or relocated storage and breakbulk facilities at points not served by the railroads.

Rates for fresh potatoes quoted by the BAR as of February 1979 are listed in Table 8, along with suggested truck rates between these points.

Rail movements of this nature have a history of being acceptable only as a secondary means of transporting potatoes. Even though the BAR initiated a $.10-per-hundredweight unloading rebate to compete with truckers' services, other aspects of rail service were not acceptable. While receivers are concerned with the longer average time rail service takes in comparison to trucks, they are more concerned with its reliability. Receivers find that even when truck costs are higher than rail, the service is worth the extra cost. Railroads have not been able to deliver with the reliability required by receivers.

Single-car rail service from shipper to receiver should not be pursued as an alternative to trucking. Maintaining peak demand service by the railroads has proven too costly, and service has been discontinued.

Trainload-Refrigerated Railcar Service

Looking for alternatives that might provide more dependable transportation services, pilot projects were initiated under USDA's Federal-State marketing improvement program to ship potatoes to Portland and Boston by rail with direct transfer to truck for delivery to destination. The hope was that more trucks would be available at the transfer point south of Maine and that dependable service could be established.

The pilot project was successful in some ways. However, the following

Table 8--BAR fresh potato rates, February 1979

| City | Rail rates | | | | | | | | Truck rates 1/ |
|---|---|---|---|---|---|---|---|---|---|
| | 40K | 45K | 50K | 55K | 60K | 80K | 100K | 120K | |
| | Cents per hundredweight | | | | | | | | |
| Harlem River, N.Y. | (187) | (180) | 175 | 172 | 170 | 166 | 161 | 150 | 175 |
| Philadelphia, Pa. | - | - | (218) | (213) | 192 | 190 | 187 | 180 | 195 |
| Baltimore, Md. | - | - | (258) | (251) | (227) | (218) | (214) | (206) | 205 |
| Washington, D.C. | - | - | (293) | (278) | (256) | (248) | (237) | (231) | 210 |
| Orlando, Fla. | (433) | - | (388) | - | - | - | - | - | 240 |

1/ Based on suggested rates to truck brokers in the Presque Is. area.
( ) Indicate rail rates greater than the suggested truck rate.

problems made the program impractical:

1. The origin-inspection certificate did not carry through to destination, as it became void at the transfer point.

2. The doublehandling caused some loss and damage.

3. It was not possible to obtain dependable rail arrival times at transfer points, which created truck-scheduling difficulties.

4. Delays in transfer also occurred due to truck unavailability when the car arrived.

5. Invoicing and customer service problems occurred when loads did not go out from the transfer point exactly as scheduled (sometimes small lots were left when loads were split).

6. The rail freight, transfer charges, and truck rate beyond resulted in a higher total cost than the straight truck rate.

Considering the possibility that there may be ways to overcome the problems of dependable rail arrival times, delays in transfer operation, poor customer relations, incorrect invoices, and higher costs, the economics of utilizing trainload movements for establishing forward stocks near major markets were developed.

The lowest possible costs include trainload variable costs to the distribution center, storage, in-and-out charges at the warehouse, and local delivery (see table 9). Variable costs were computed for trainload (51-car) operations from Presque Isle to Wilkes-Barre and Philadelphia, Pa. (see appendix table 2.)

The cost savings of trainload shipments are not sufficient to cover the in-out handling, storage, and local delivery of this operation. Variable costs of trainload shipments, plus handling and delivery, do not vary dramatically from single-car delivery to the same destinations.

In a way, this confirms a discussion with F.J. Reardon in Boston who built a modern potato breakbulk and packing operation only 5 years ago. The operation was not competitive with other marketing strategies and Reardon was forced to liquidate. The following reasons were cited:

1. The operation was unable to obtain a freight advantage to bulk shipping from Presque Isle to Boston.

2. Reardon experienced up to a 7-percent loss in weight, damage, size, and quality from the washing and grading operation.

3. Maine potato sellers were not willing to grant an allowance for washing, grading, and packing. The only allowance granted was for bag cost.

The practice of not granting a washing, grading, and packing allowance may be due to the use of family members to complete this operation at origin. One can assume the family labor force to be excess, so no real costs are incurred by their use. Granting an allowance to a packing operation elsewhere would be unreasonable.

It is clear from the cost estimates that if the railroads should want to get back into the potato-hauling business,

Table 9--Estimated cost for potato carriage from Presque Isle through two distribution centers for local delivery, July 1, 1979

| | Wilkes-Barre | Philadelphia |
|---|---|---|
| | Per hundred pounds | |
| Trainload (51-car) variable costs from Presque Isle 1/ | $1.18 | $1.31 |
| Warehouse in-and-out handling 2/ | | |
| (Slipsheets or pallets) | .25 | .25 |
| Storage (per month) | .35 | .35 |
| Subtotal | $1.78 | $1.91 |

WILKES-BARRE

| | New York (134 miles) | Philadelphia (112 miles) | Baltimore (177 miles) | Washington (214 miles) |
|---|---|---|---|---|
| F.O.B. warehouse Wilkes-Barre | $1.78 | $1.78 | $1.78 | $1.78 |
| Local delivery (truckload) | .79 | .79 | .95 | 1.14 |
| TOTAL | $2.57 | $2.57 | $2.73 | $2.92 |

PHILADELPHIA

| | New York (106 miles) | Philadelphia (0-25 miles) | Baltimore (94 miles) | Washington (131 miles) |
|---|---|---|---|---|
| F.O.B. warehouse Philadelphia | $1.91 | $1.91 | $1.91 | $1.91 |
| Local delivery (truckload) | .79 | .40 | .70 | .79 |
| TOTAL | $2.70 | $2.31 | $2.61 | $2.70 |
| July 1, 1979 Truck rates from Presque Is. | $1.75 | $1.95 | $2.05 | $2.10 |

1/ See appendix table 2 for rail-variable cost estimates.
2/ Quoted rates from operating warehouses.

using trainload-variable operating costs would be too high for a cost-effective forward-distribution program.

Variable costs are listed in table 9 to show that even at this low level the total cost for establishing forward stocks of potatoes near major market areas would not be practical from a cost standpoint. It should be remembered that variable costs do not cover fixed overhead, and a railroad cannot operate at variable costs for long and still stay in business. Fully allocated cost estimates for this trainload service are shown in appendix table 3. They amount to an additional 34 cents a hundredweight to Wilkes-Barre and 37 cents a hundredweight to Philadelphia for a total of $1.52 and $1.68 a hundredweight.

Trainload shipments of potato stocks should not be considered at the present time unless railroads can offer a lower rate than the computed variable costs.

## Refrigerated Trailer-on-Flatcar Service

The concept of piggybacking refrigerated vans on a single flatcar deserves appraisal as an alternative to the present for-hire trucking system. If railroads are to participate again in carriage of potatoes, it is clear they will need some assurance from shippers that rail service would not be used only as an alternative when there is a scarcity of trucks. A plan whereby the shipper carries a portion of the financial burden is the keystone of the service. The Interstate Commerce Commission (ICC) designates this service as Plan III TOFC. The mix of rail carrier and shipper investment allows

owned or

at

for van pickup and delivery at origin and destination. An agreement between railroads and shippers concerning maintenance of mechanical equipment to control potato temperature in transit is necessary. Shippers would be responsible for cleaning, maintenance, and tracking of vans.

Cost estimates of two Plan III TOFC moves were computed using the ICC's Rail Form A costing scales.3/ The movements, Presque Isle, Maine to Boston, Mass., and Philadelphia, Pa., assumed:

1. A through-train movement.
2. Two trailers per shipment.
3. Forty-eight thousand-pound lading weight per trailer.
4. One hundred percent empty return.

Rail-movement costs to Boston and Philadelphia were $1.70 and $1.63 more, respectively. Shipper costs, which are not included in the rail-movement costs above, are management costs for the TOFC operation.

Some cost reduction is possible if participating railroads with excess capacity feel the potato traffic should be encouraged. In this case, railroads may offer a rate based on variable cost rather than fully allocated costs. A cost reduction not over 19.8 percent and 28.6 percent for Boston and Philadelphia, respectively, is possible but only until railroads are using plant to capacity. Costs then will be fully allocated, that is, fixed or constant costs would be included in the computation of rates.

3/ A cost itemization for both movements is in appendixes 4 and 5.

The cost of the round-trip rail movement could be offset by revenues achieved through backhauls. Sources familiar with Maine's commerce estimate that tonnage leaving the State is 10 times greater than tonnage entering. Based on this estimate, a maximum of 10-percent revenue backhauls could be achieved.

Total maximum cost reductions then would be 29.8 percent for the Boston move and 38.6 percent for the Philadelphia move. The Boston move by rail could become $2.00/cwt., $.85/cwt. above the for-hire truck rate, and the Philadelphia TOFC move could be reduced to $2.20/cwt., $.25/cwt. above the current truck rate. Both rail rates are possible only under optimal conditions but they still exceed the current truck rates. For-hire truck rates are expected to increase, making rail carriage a more feasible option. Shippers may request a rate from the railroads and carefully consider backhaul possibilities. A Plan III single-car TOFC movement to Boston or Philadelphia is not a possible alternative at this time to the present method of transporting Maine potatoes.

## Plan III TOFC Unit-Train Rail Service

The cost of the refrigerated-railcar service and the single-car TOFC service examined above generally has been higher than the present for-hire truck service.

Fully allocated costs of the rail move compared with for-hire truck rates are:4/

| | Plan III TOFC A/ | For-hire truck B/ |
|---|---|---|
| | Per hundredweight | |
| Presque Isle to Boston | $1.21 | |
| Boston to Presque Isle | .96 | |
| Cost to shipper | .68 | |
| Total cost | $2.85 | $1.15 |
| Presque Isle to Philadelphia | $1.58 | |
| Philadelphia to Presque Isle | 1.27 | |
| Cost to shipper | .73 | |
| Total cost | $3.58 | $1.95 |

4/ Cost itemizations for shipper and railroad are in appendix 6.

A/ From "Railroad Cost Scales, 1975", ICC Bureau of Accounts--Statement #1C1-75, Washington, D.C.--updated to September 1979.

B/ From Aroostook County Suggested Potato Rates July 1, 1978--unpublished.

Rail costs are high due to the number of separate railroads between production and market areas. As was already noted, three railroads are involved in the movement from Presque Isle to Boston. At each rail interchange the probability that the shipment will be late, lost, and/or damaged increases.

In order to minimize the transfer of goods and facilitate rapid movement through rail interchange points, the TOFC unit-train approach has been examined. Representatives of four major railroads, the Bangor and Aroostook, the Maine Central (MC), the Boston and Maine (B&M), and the Delaware and Hudson (D&H), were asked to comment and submit rates on a TOFC unit-train movement.

The movement itself would consist of 50 trailers on 25 flatcars originating at the BAR piggyback ramps at Presque Isle, Maine. Each Monday the train would leave Presque Isle for a staging area in Wilkes-Barre, Pa. Transit time would be 40 hours, with 12 hours allowed at either end for ramping and deramping. At each end of the movement, 50 trailers would be loading and unloading to prepare for transit when the unit train arrives. Trailers would be allowed 4 days to collect a load of potatoes in Presque Isle or to deliver potatoes within a 134-mile radius of Wilkes-Barre. The 25-car unit train would move continuously, making a complete round trip every 4.5 days. Trailer requirements would be 50 in transit, 50 at each end of the move, and 30 to handle breakdowns and "lost" trailers, for a total of 180 trailers.

The market area within 134 miles of Wilkes-Barre (including New York City) could handle easily the 50-car influx of potatoes every 4.5 days. The TOFC movement would represent only about 27 percent of the potatoes demanded in that area in a given time period. Table 10 lists the number of comparable trailers received in three market areas between December and May.

The unit train's arrival would not necessarily disrupt potato market prices.

Table 10--Number of 42,500-lb. units of fresh Maine potatoes received by market areas per week 1/

| Month | N.Y.-N.J.-Pa. | Md.-D.C. | Fla. |
|---|---|---|---|
| December | 248 | 22 | 55 |
| January | 265 | 40 | 54 |
| February | 264 | 37 | 48 |
| March | 383 | 54 | 50 |
| April | 330 | 33 | 38 |
| May | 258 | 38 | 27 |

1/ These figures are compiled from data published by the Federal-State Market News Service's Marketing Maine Potatoes (Presque Isle, Me.: 1975-77). Each figure is an average of the reported shipments for crop years ending in May 1976-1978.

Because the shipper would still control the trailer, and would have 4 days in which to deliver the product, the "staging area" at Wilkes-Barre would be in effect a forward stocks area. Potato brokerage still might be controlled in Presque Isle and the orders communicated to the dispatcher at Wilkes-Barre. Once an order was received at Presque Isle, the shipper could determine whether to dispatch a for-hire truck from Presque Isle, or use a trailer shipment at or due to arrive at Wilkes-Barre.

It would be important that Presque Isle potato shippers form a shippers' association to monitor brokering, tracking, and billing. The railroads would require a contact at a central organization because dealing with individual shippers using this service would be very complicated. The association also would need to finance the purchase or lease of trailers.5/ Organizational possibilities are covered in a separate section of this report.

Cost estimates on the TOFC unit-train move between Presque Isle and Wilkes-Barre, presented below, were obtained directly from railroads and computed using ICC Rail Form A.

Assumptions:

1. Twenty-five flatcars, 180 trailers (2 trailers/flatcar).
2. Forty-eight thousand-pound lading weight/ trailer.
3. Forty hours transit time, 12 hours per terminal.
4. One hundred percent empty return.

The difference between the ICC-cost computations and the suggested rail rate ($0.24/cwt.) probably is due to the use of standard single-car ICC-costing techniques to cost unit-train movements. The "state of the art" has not progressed yet to the point where the efficiencies of hauling a trainload shipment between two points can be dealt with accurately. However, some costing accommodations have been made to compute savings in clerical and switching operations.

In order to compare the rail rate to that of other transportation services, the rail rate suggested by the railroads is used. Assuming the suggested rate covers the full cost of operation, increases in the railroads' rate should occur over time due to increases in the actual cost of operation. However, any increases in rail costs should be less than similar increases in truck costs--especially in the labor and fuel categories.

The suggested rail rate plus shipper costs, $3.28/cwt., is $1.23/cwt. higher than the for-hire truck rate. This rail rate seems to preclude the necessary investment to initiate unit-train TOFC service, but a number of factors may reduce the rate. They include:

1. Possible reductions in train costs.
   a. The rate is based on using 2 trains, 25 flatcars/train, but further analysis has suggested 1 train of 25

5/ An excellent treatment on advantages and disadvantages of trailer leasing and purchasing, trailer maintenance, and equipment is included in appendix 7.

flatcars would be a more practical beginning.

b. A reduction in transit time would achieve savings in linehaul and trailer costs.

c. Rail labor recently has allowed crew reductions on an experimental basis, especially in the case of newly inaugurated service. A new unit-train move would create new positions, and a train crew reduction below the normal complement for

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TOFC Unit-train Costs

| | |
|---|---|
| A. ICC-cost computation method:6/ | |
| 1. Presque Isle to Wilkes-Barre (fully allocated cost) | $1,339.76/shipment<br>1.39/cwt. |
| 2. Wilkes-Barre to Presque Isle (fully allocated cost) | $1,016.80/shipment<br>1.07/cwt. |
| Total rail cost | $2,356.56/shipment<br>2.45/cwt. |
| 3. Shipper costs | $1,028.48/shipment<br>1.07/cwt. |
| 4. Total cost of movement | $3,385.04/shipment<br>3.52/cwt. |
| B. Rate suggested by railroads (assuming 2 trains, 25 flatcars/ train) | |
| 1. Presque Isle to Wilkes-Barre and return | $2,123.00/shipment<br>2.21/cwt. |
| 2. Shipper costs | $1,028.48/shipment<br>1.07/cwt. |
| 3. Total cost of movement | $3,151.48/shipment<br>3.28/cwt. |
| C. Comparable cost to shipper of for-hire trucking | 2.05/cwt. 7/ |

6/ ICC-costing methodology is fully itemized and explained in appendixes 4, 5, and 6.

7/ Aroostook County potato rates as of Sept. 1, 1979 from county potato shippers.

this movement would not reduce overall train crew employment.

d. As diesel fuel continues to rise, the cost advantages of train versus truck movements will become more apparent.

e. A train was assumed to have 25 flatcars but more could be added per train. More efficient use of labor and train power could produce cost savings.

2. Possible reduction in shipper costs.

a. Once it is determined which shippers would be involved in the train move, a more accurate determination can be made of pickup-and-delivery costs. A charge of $92.60 for each trailer within a maximum of 55.6 miles could be reduced.

b. The return move assumes 100 percent empty backhauls, although a 90-percent empty backhaul is normal for truck traffic. With a scheduled move out of Wilkes-Barre and reliable delivery time at Presque Isle, there is every reason to believe shippers would use the rail service. If the TOFC move could haul 10 percent revenue traffic on the return run, using potato rates as a proxy, a 10-percent reduction in the rail rate ($0.328/cwt.) could be achieved.

The TOFC unit-train move as initially presented in this section is not a feasible alternative to the present for-hire trucking movements. Suggestions indicating how costs of the move could be reduced substantially may make the unit train a more realistic possibility. Railroads have indicated that their suggested rail rates and services are a "starting point" and that they would be willing to discuss the proposal further. A shippers' representative should contact rail representatives for rates and services that vary from this type of movement. 8/

Four principal types of rail carriage are available to the potato shipper:

1. Single-refrigerated car service.
2. Trainload-refrigerated car service.
3. Single-car Plan III TOFC service.
4. Unit-train Plan III TOFC service.

The TOFC services offer the greatest advantages to shippers, although single-car or unit-train services are not competitive as they are presented. As transportation input costs change, so will the feasibility of some of the projects outlined above. Potato shippers interested in a transportation alternative should work to implement and perfect the more feasible options using the methods of analysis and suggestions presented in this study.

8/ Howard L. Cousins, Vice President-Marketing, Bangor and Aroostook Railroad, acted as coordinator in obtaining rail information from the railroads for this study.

This section studies the feasibility of transporting ICC-exempt agricultural commodities by water in a projected service between Maine and Florida. Study results suggest that a waterborne system, transporting container or trailer loads of these agricultural products, may compete effectively with the existing trucking system. Specifically, the study found that a tug/barge system consisting of a 2,250-BHP tug and a 260-foot deck barge provides the lowest total waterborne cost of the 4 vessel systems surveyed in the report.

Several assumptions were made in examining candidate systems for the waterborne transportation of agricultural commodities between Maine and Florida. These were:

1. A shipping season of 6 months--December-May.

2. A service frequency ranging from 1 week to 12 days.

3. A balanced trade, involving a maximum of fifty 40-foot units each way per week with 30-35 units per week as an average.

Certain additional internal requirements were considered. First, the candidate vessels examined are presently in operation in various trades, so vessel designs and capabilities are proven. The obvious drawback of using real vessels is that as in the present case, they may not be optimal for the trade being studied. Secondly, all cost elements were determined from a 1978-79 base period to make it easier to compare vessels of different real ages. Original acquisition costs of older vessels were escalated to the 1978-79 levels, and such operating expenses as insurance, maintenance, and repair are based upon these higher levels. While this procedure has resulted in higher estimated operator-revenue requirements and, thus, higher unit-transportation charges, it also has afforded a "worst case" outlook on cost projections for the deployment of the best small vessel equipment offered by the maritime industry.

In real life, somewhat older vessels' systems and the resulting lower cost structures, coupled with market supply-and-demand considerations, will tend to reduce appreciably actual charter rates. It is assumed that all vessels will enjoy a full level of alternative employment during the 6 months they are not required for this service.

Finally, in developing cost comparisons among vessel systems in the study, attempts were made to standardize certain cost and operational factors such as diesel fuel charges, crew sizes, and in-port loading and discharge times. Assumptions as to levels of recovery of capital costs and return on equity also were applied to each vessel situation examined.

## Vessel Systems--Characteristics and Costs

Four vessel systems were considered. These included:

1. Tug/barge system No. 1, consisting of a 2,250-BHP tug and a 260-foot deck barge.

2. Tug/supply system No. 2, consisting of a 206-foot tug/supply vessel with a 3,600-BHP engine.

3. Tug/barge system No. 3, consisting of a 4,300-BHP tug and a 260-foot deck barge.

4. Tug/barge system No. 4, consisting of a 4,300-BHP tug and a 400-foot deck barge.

In terms of equipment utilized, these four vessel systems encompass two deck barges, two oceangoing tugs, and one tug/supply vessel with the following specific characteristics and daily operating costs:

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Deck barge ISLA GRANDE

Characteristics:

| | |
|---|---|
| Length: | 400 feet |
| Beam: | 99.5 feet |
| Depth: | 20 feet |
| Gross tons: | 4,860 |
| Carrying capacity: | Ninety 40-foot trailers on a single deck |

Year built: 1970

Costs:9/

| | |
|---|---|
| Construction cost: | $3.4 million |
| Daily rate: | |
| Capital costs | $847 |
| Return on equity (10%) | 117 |
| Maintenance and repair | 68 |
| Insurance | 183 |
| Total | $1,215/day |

---

Deck barge ST. JOHN

Characteristics:

| | |
|---|---|
| Length: | 260 feet |
| Beam: | 76 feet |
| Depth: | 16.6 feet |
| Gross tons: | 2,624 |
| Carrying capacity: | Eighty-four 40-foot containers on two tiers |

Year built: 1975

Costs:

| | |
|---|---|
| Construction cost: | $2.1 million |
| Daily rate: | |
| Capital costs | $523 |
| Return on equity (10%) | 72 |
| Maintenance and repair | 43 |
| Insurance | 129 |
| Total | $767/day |

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Ocean tug BARBARA FOSS

Characteristics:

| | |
|---|---|
| Length: | 120 feet |
| Beam: | 34 feet |
| Draft: | 13 feet |
| Gross tons: | 198 |
| Horsepower: | 4,300 |

Year built: 1977

Costs:

| | |
|---|---|
| Construction cost: | $2,882,857 |
| Daily rate: | |
| Capital costs | $718 |
| Return on equity (10%) | 98 |
| Crew wages (8 men) | 905 |
| Subsistence | 48 |
| Stores & supplies | 84 |
| Maintenance and repair | 279 |
| Insurance | 197 |
| Administration | 116 |
| Other | 35 |
| Total operating expenses | $2,480/day |
| Fuel costs/day at sea | |
| 4300 h.p. 143 bbls/day x $28.00/bbl | $4,004 |
| Total daily rate | $6,484 |
| Fuel costs/day in port | |
| 6 bbls/day x $28.00 | $ 168 |

---

9/ For the development of capital and equity costs, see appendix 8.

Ocean tug PETER FOSS

Characteristics:

| | |
|---|---|
| Length: | 95 feet |
| Beam: | 32 feet |
| Draft: | 13 feet |
| Gross tons: | 125 |
| Horsepower: | 2,250 |

Year built: 1977

Costs:

| | | |
|---|---|---|
| Construction cost: | | $1,880,000 |
| Daily rate: | | |
| Capital costs | $468 | |
| Return on equity (10%) | 65 | |
| Crew wages (8 men) | 905 | |
| Subsistence | 48 | |
| Stores and supplies | 59 | |
| Maintenance and repair | 197 | |
| Insurance | 148 | |
| Administration | 104 | |
| Other | 35 | |
| Total operating expenses | | $2,029/day |
| Fuel costs/day at sea | | |
| 2250 h.p. 75 bbls/day x $28.00/bbl | 2,100 | |
| Total daily rate | $4,129 | |
| Fuel costs/day in port | | |
| 3 bbls/day x $28.00 | | $84 |

Tug/supply ACADIAN MARINER

Characteristics:

| | |
|---|---|
| Length: | 217 feet |
| Beam: | 44 feet |
| Draft: | 13 feet |
| Gross tons: | 199 feet |
| Horsepower: | 3,600 |
| Carrying capacity: | Thirty-four 40-foot containers on two tiers |

Year built: 1979

Costs:

| | | |
|---|---|---|
| Construction cost: | | $3.3 million |
| Daily rate: | | |
| Capital costs | $822 | |
| Return on equity (10%) | 113 | |
| Crew wages (8 men) | 905 | |
| Subsistence | 48 | |
| Stores and supplies | 99 | |
| Maintenance and repair | 330 | |
| Insurance | 229 | |
| Administration | 123 | |
| Other | 35 | |
| Total operating expenses | | $2,704 |
| Fuel costs/day at sea | | |
| 3600 h.p. 109.71 bbls/day X $28.00/bbl | 3,072 | |
| Total daily rate | $5,776 | |
| Fuel costs/day in port | | |
| 5.71 bbls/day x $28.00 | | $160 |

## Vessel-Systems Cost Comparisons

The four vessel systems were compared in terms of transportation cost per unit, service frequency, and carrying capacity for the 6-month shipping season. Specifically, their performances were compared over a round-trip, point-to-point service involving the ports of Searsport, Maine, and Palm Beach, Florida. These two ports were chosen on the basis of three considerations:

1. Port tariff rates.
2. Location and accessibility to inland surface transportation systems.
3. Adequacy of port facilities.

Table 11 provides a breakdown of vessel expenses and port charges making up the total transportation costs, exclusive of drayage.

As the table shows, unit transportation costs for the coastwise movement from Maine to Florida range from a low of $543 to a high of $847. These cost differentials are due to variations in vessel speeds, fuel consumption rates, capital costs, and carrying capacities.

It should be pointed out that only the tug/supply vessel would operate at 100-percent utilization of available capacity, while vessel systems Nos. 1 and 3 operate at 60 percent, and No. 4 at 55-percent utilization rates. The utilization rate is critical in determining trailer-unit costs. Utilization of vessel systems 1, 3, and 4 is limited due to cargo availability of 50 units per trip assumed for the study.

Table 11 also shows the number of round trips that each candidate vessel can undertake during the course of a 6-month shipping season. Service frequency being a function of speed, the best performance in this regard is provided by system No. 2 with 20 round trips.

Finally, all vessel systems except No. 2 can carry in excess of the maximum expected trailer throughput for the 6-month period, 2,600 units (100 units/round trip x 26 weeks = 2,600 units).

## Port Fees

In addition to ocean transportation costs, charges for the ports of Palm Beach and Searsport must be considered. They include a dockage fee, wharfage, and handling charges.

Port fees for Searsport and Palm Beach harbors

| | Dockage | Wharfage | Handling |
|---|---|---|---|
| Searsport | --- | 20¢/cwt. | $175/unit |
| Palm Beach | 5¢/gross ton | 60¢/short ton | $2/short ton |

These figures translate into the following unit costs for the four vessel systems, using 48,000 pounds per trailer:

| | | System No.1 | System No.2 | System No.3 | System No.4 |
|---|---|---|---|---|---|
| Searsport | Dockage | --- | --- | --- | --- |
| | Wharfage | $ 96 | $ 96 | $ 96 | $ 96 |
| | Handling | $175 | $175 | $175 | $175 |
| Palm Beach | Dockage | 1.30 | 1.80 | 1.30 | 2.43 |
| | Wharfing | 14.40 | 14.40 | 14.40 | 14.40 |
| | Handling | 48 | 48 | 48 | 48 |
| Total port fees | | $334 | $333 | $334 | $335 |

Table 11--Derivation of water transportation costs

| Maine/Florida service<br>Searsport/Palm Beach<br>1,254 nautical miles | Tug/barge system #1<br>2250-h.p. tug<br>260-foot barge<br>10 knots | Tug/supply system #2<br>3600 h.p.<br>13 knots | Tug/barge system #3<br>4300-h.p. tug<br>260-foot barge<br>12 knots | Tug/barge system #4<br>4300-h.p. tug<br>400-foot barge<br>10 knots |
|---|---|---|---|---|
| Vessel capital and operating costs/day | $ 2,797 | $ 2,704 | $ 3,248 | $ 3,695 |
| Round-trip time/days | 11.5 | 9 | 9.75 | 11.5 |
| Underway fuel costs/day | 2,100 | 3,072 | 4,004 | 4,004 |
| Underway time | 10.5 | 8 | 8.75 | 10.5 |
| Inport fuel costs (24 hours) | 84 | 160 | 168 | 168 |
| Total round-trip cost | $54,300 | $ 49,072 | $ 66,871 | $ 84,702 |
| Round-trip capacity - 40-foot units - | 100 | 68 | 100 | 100 |
| Transportation cost/unit | $ 543 | $ 722 | $ 669 | $ 847 |
| Total shipping season throughput | | | | |
| No. of round trips (r.t.) | 15.82 | 20.22 | 18.66 | 15.82 |
| Maximum r.t. capacity | 168 | 68 | 168 | 180 |
| Total no. of units | 2,657 | 1,375 | 3,134 | 2,847 |

## Drayage Costs

Drayage involves the movement of containers between the pier and their origin/destination point. Two separate sets of drayage costs are considered here, one for Florida and the other for Maine.

For the Florida drayage, three different movements were examined. They were:

| | | |
|---|---|---|
| Palm Beach | Jacksonville | $294 |
| | Orlando | 318 |
| | Miami | 122 |

Source: A Florida independent trucking firm--July 1979.

These drayage costs assume a backhaul to the port of Palm Beach, entailing the same fee. An average of the three figures above--$245--was selected as representative of the Florida drayage cost per unit.

For the Maine end of the operation, it is estimated trucks would travel a round-trip distance of 386 miles between Searsport Harbor and the Maine potato-production areas. Cost of drayage would be $321 a unit, making a total of $566 a unit for drayage at origin and destination.

## Trailer-leasing Costs

Any shipper has several options at his disposal for obtaining the trailers necessary to transport his products. In the case of the Maine-Florida agricultural products transportation service, Maine shippers may consider two basic options: ownership and leasing. The former is considered less expensive in the long run, but the latter approach provides the flexibility necessary in a transportation service of 6-months duration. For purposes of this study, only the leasing option will be considered.

The daily trailer-leasing costs shown in the following table are deemed higher than average and are, of course, subject to market supply-and-demand considerations. For an explanation of the physical characteristics of the trailers, see appendix 9.

In order to arrive at a trailer-leasing cost per unit over the course of a round trip, it is necessary to multiply the daily leasing rate by round-trip time. Since each trailer enroute requires 2.6 trailers at origin and destination to maintain in-port and underway schedules and to allow for trailer maintenance, these figures then must be multiplied by 3.6.

After making these calculations, trailer-leasing costs for the four vessel systems are shown in table 12.

The study also found no particular cost-of-service advantages in employing containers versus trailers. Each has its advantages. Trailer-leasing costs are appreciably lower, but fewer trailers can be carried aboard any given ship or barge on a single deck. Containers may be stacked two or three tiers high, reducing unit-transportation costs, but they are more expensive to lease.

## Total Transportation Cost Per Unit

Having developed water transport costs, port fees, drayage charges, and trailer-leasing costs we now can derive the total transportation cost per unit for the four candidate vessels.

## Marine Transport Summary

All costs used in preparation of this study are for the 1978/79 period.

Therefore, they represent the highest probable costs applied to some of the newest and more sophisticated vessel systems offered by the maritime industry for the service contemplated. In actual practice, market supply-and-demand factors and the likely possibility that older--hence, less capital-intensive--equipment can be obtained for long-term charter, should reduce water transport rates considerably.

The service frequency of the four candidate systems also appears to be satisfactory, ranging from a low of 9 days total transit time to a high of 11-1/2 days. The Florida market normally consumes 40 trailers of potatoes per week. Assuming the water shipment would not be entirely potatoes, all the potatoes would not have to be delivered on the day of arrival. The market should not be overloaded by arrival of a vessel every 9 days. Total carrying capacity is

Table 12--Leasing costs

| Vessel system | Trailer cost/day | Round-trip voyage time | Trailer backup per trailer | Unit-leasing cost/r.t. |
|---|---|---|---|---|
| No. 1 | $15 | 11.50 days | 3.6 | $621 |
| No. 2 | $15 | 9.00 | 3.6 | 486 |
| No. 3 | $15 | 9.75 | 3.6 | 526 |
| No. 4 | $15 | 11.50 | 3.6 | 621 |

Source: Trailer costs were obtained from leasing firms in New York.

Total unit-transportation cost

| Vessel system | No. 1 | No. 2 | No. 3 | No. 4 |
|---|---|---|---|---|
| Waterborne cost | $543 | $722 | $699 | $847 |
| Port fees | $334 | $333 | $334 | $335 |
| Drayage charge | $566 | $566 | $566 | $566 |
| Trailer-leasing costs | $621 | $486 | $526 | $621 |
| Total cost/unit | $2,064 | $2,107 | $2,125 | $2,369 |
| Cost/cwt. | $4.30 | $4.39 | $4.43 | $4.93 |

also more than adequate, based on a maximum of 50 units each way per week and actual requirements of between 30 and 35 units. In this regard, it should be noted that vessel systems Nos. 1, 3, and 4 would operate at less-than-full capacity utilization under those weekly capacity requirements. Unit costs would diminish appreciably should the 50 units-per-week maximum increase; alternatively, smaller capacity barges than those examined in this report also would contribute to reduction of charter rates and unit costs.

Adding port fees for Searsport and Palm Beach, drayage charges for final delivery, and trailer-leasing costs completes the list of cost factors making up the total transportation rate required to move potatoes from Maine to Florida.

During the course of the study, cost and service characteristics of four vessel systems were examined. Study findings show that the four candidate vessels project developed rates (at 100-percent empty return) that are not competitive with those charged by the existing overland transportation systems. However, the tug/barge system comprising a 2,250-h.p. tug and 260-foot deck barge presents the lowest waterborne transportation cost at $2,064/unit and $4.30 per hundredweight.

With for-hire truckers charging $2.50 per hundredweight on the average, for hauls from Presque Isle to Florida markets, the water carriage is $1.80 per hundredweight more. However, if 72 percent of the returning trailers are revenue hauls, assuming the potato rate, this form of transportation may be considered competitive to present transport methods. Maine shippers should investigate the possibility of obtaining backhauls on a regular basis from Florida shippers with markets in northern New England and Canada.

History shows that organizations generally start operating their own or leased trucks because they are unable to get satisfactory service from for-hire truckers. After an initial period, if the organization finds the trucks are providing a reasonable return on investment, it will stay with the trucks and even may expand the trucking operation. If the trucks do not provide a reasonable return on investment, the organization will eventually get out of the trucking business.

In order to establish a successful trucking operation, it is necessary to find a highly qualified and experienced management team that will know how to utilize the equipment to its fullest. It is also necessary to establish good maintenance, safety, scheduling, tracking, and cost programs (including route profitability). It is also important to perform the marketing function to develop backhauls for as many of the return-trip miles as possible.

A standard of measurement must be established to determine investment return. The best method of evaluating the feasibility of operating a private or cooperative fleet of trucks is measuring the present cost for-hire truck transportation against the estimated cost of operating a private fleet.

Table 13 shows the rates paid from Presque Isle to nine major market areas, January through May 1979. The "standard" column indicates the most common rate paid, while the "low" and "high" columns show the degree of variation from this level.

These rates clearly show the backhaul effect on prices charged. The rates from Presque Isle to Baltimore (778 miles) for $2.05 a hundredweight and Jacksonville (1,522 miles) for only $.30 more,

exemplify this relationship. Also, Pittsburgh (954 miles) and Cleveland (976 miles) share the same $2.35 rate with Jacksonville (1,522 miles).

In the case of Florida, it is clear that the northbound move is the primary revenue haul and the southbound move is the backhaul.

Table 14 compares the average yearly rates that have been paid for hauling potatoes from production areas to selected markets from 1974 through the first 4 months of 1979. Rates paid by Maine shippers can be seen in relation to other potato-shipping areas of the United States.

The data in table 14 show that rates from Presque Isle to Boston have increased by 38 percent over the last 5 years, and by 42 percent to New York City, while the U.S. potato industry average increased 35 percent.

Another measure of comparison is the rate paid per mile traveled. Again, Maine is right on the industry average of $1.31 per mile with Boston at $1.27 and New York City at $1.30.

The difficulty with the comparison of this type is that it does not take into consideration the backhaul factor. In table 14 there are 2 areas that stand out as being farthest from population centers where backhauls might be generated.

Table 13--Truck rates paid on fresh potatoes to selected markets, January through May 1979

| Presque Isle to: | Miles 1/ | Low | Standard | High |
|---|---|---|---|---|
| | | Dollars per hundredweight | | |
| Boston | 388 | .80 | 1.15 | 1.20 |
| New York City | 590 | 1.60 | 1.75 | 1.85 |
| Philadelphia | 686 | 1.85 | 1.95 | 2.05 |
| Baltimore | 778 | 2.00 | 2.05 | 2.15 |
| Richmond | 920 | 2.10 | 2.20 | 2.30 |
| Pittsburgh | 954 | 2.30 | 2.35 | 2.60 |
| Cleveland | 976 | 2.30 | 2.35 | 2.60 |
| Jacksonville | 1,522 | 2.20 | 2.35 | 2.45 |
| Miami | 1,870 | 2.50 | 2.65 | 2.75 |

1/ Source: Household Goods Mileage Guide No. 11.

Table 14--Average rates paid for shipping potatoes from production areas to selected markets, 1974-79

| Potatoes | Miles 1/ | Year Average | | | | | | Percent increase 1974-79 | 1979 rate per mile, one-way only 3/ |
|---|---|---|---|---|---|---|---|---|---|
| | | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 2/ | | |
| | | Dollars per hundredweight | | | | | | | |
| Idaho Falls, Idaho, to: | | | | | | | | | |
| Atlanta Ga. | 1946 | 2.95 | 3.25 | 3.32 | 3.44 | 3.60 | 3.75 | 27 | .87 |
| Chicago, Ill. | 1430 | 2.22 | 2.35 | 2.49 | 2.62 | 2.86 | 2.98 | 34 | .94 |
| Los Angeles, Calif. | 898 | 1.23 | 1.25 | 1.26 | 1.28 | 1.43 | 1.53 | 24 | .77 |
| New York City, N.Y. | 2223 | 3.32 | 3.87 | 4.12 | 4.32 | 4.59 | 4.81 | 45 | .97 |
| Presque Isle, Maine, to: | | | | | | | | | |
| Boston, Mass. | 388 | .80 | .81 | .90 | .99 | 1.06 | 1.10 | 38 | 1.27 |
| New York City. N.Y. | 590 | 1.20 | 1.22 | 1.36 | 1.43 | 1.64 | 1.70 | 42 | 1.30 |
| Red River Valley, Minn.-N.D., to: | | | | | | | | | |
| Chicago, Ill. | 714 | 1.42 | 1.45 | 1.42 | 1.62 | 1.70 | 1.75 | 23 | 1.10 |
| Detroit, Mich. | 972 | 1.83 | 1.85 | 1.90 | 2.05 | 2.23 | 2.30 | 26 | 1.06 |
| Long Island, N.Y., to: | | | | | | | | | |
| Atlanta, Ga. | 913 | (1.02) | 1.02 | 1.11 | 1.29 | 1.58 | 1.35 | 32 | .67 |
| Boston, Mass. | 271 | (.78) | .78 | .80 | .83 | 1.06 | 1.00 | 28 | 1.66 |
| New York City, N.Y. | 67 | (.50) | .50 | .51 | .52 | .57 | .55 | 10 | 3.69 |
| Western & Central, N.Y., to: | | | | | | | | | |
| Atlanta, Ga. | 880 | 1.29 | 1.35 | 1.24 | 1.54 | 1.87 | 2.23 | 73 | 1.14 |
| Boston, Mass. | 328 | .97 | 1.01 | 1.00 | 1.10 | 1.29 | 1.50 | 55 | 2.06 |
| New York City, N.Y. | 220 | .91 | .91 | .94 | 1.07 | 1.20 | 1.35 | 48 | 2.76 |
| Yakima, Wash., to: | | | | | | | | | |
| Atlanta, Ga. | 2523 | 3.28 | 3.59 | 3.75 | 4.06 | 4.33 | 4.45 | 36 | .79 |
| Chicago, Ill. | 1924 | 2.62 | 3.00 | 3.10 | 3.49 | 3.53 | 3.66 | 40 | .86 |
| New York City, N.Y. | 2721 | 3.96 | 4.53 | 4.48 | 5.25 | 5.31 | 5.37 | 36 | .89 |
| Los Angeles, Calif. | 1046 | 1.38 | 1.37 | 1.52 | 1.59 | 1.72 | 1.62 | 17 | .70 |
| Madison, Wis., to: | | | | | | | | | |
| Atlanta, Ga. | 813 | 1.58 | 1.58 | 1.68 | 1.83 | 1.95 | 2.00 | 27 | 1.11 |
| Average | | 33.26 | 35.59 | 36.90 | 40.32 | 43.52 | 45.00 | 35 | 1.31 |

1/ Household Goods Mileage Guide No. 11.
2/ January through April.
3/ Based on a 45,000-pound load.

These two are Presque Isle and the Red River Valley. Estimates indicate that for every 10 to 15 trucks leaving Maine's Aroostook County loaded, only 1 returns with a load. This means that for 90 to 93 percent of the loads, 388 empty miles from Boston must be added to the truck-operating cost.

The wide variance in the size of loads also makes it difficult to analyze rates. For purposes of comparison we have used 45,000 pounds as a load. Many of the trucks leaving Aroostook County actually are loaded heavier than this. The heavier load provides some additional revenue to help offset the cost of

Table 15--Private fleet over-the-road truck-operating cost estimates for Northeastern United States 1/

| Cost items | Cents per mile |
|---|---|
| Fixed cost | |
| Interest on tractor and trailer | 6.5 |
| Management and overhead | 4.0 |
| Insurance | 3.5 |
| Licenses | 1.0 |
| Variable cost | |
| Vehicle and trailer depreciation | 10.0 |
| Drivers (two) | 25.0 |
| Operating cost | |
| Fuel 2/ | 24.0 |
| Maintenance 3/ | 6.0 |
| Tires | 2.0 |
| Miscellaneous | 1.0 |
| TOTAL COST | 83.0 |

1/ Estimates are as of July 15, 1979 and operating 100,000 miles a year.
2/ 4.2 miles a gallon at $1 a gallon.
3/ New tractor and trailer.

empty-return moves from Boston to Presque Isle.

If loads are increased from 45,000 pounds to 50,000 pounds, a Boston rate of $1.10 per hundredweight will increase the one-way per mile revenue from $1.27 to $1.42.

To compare actual rates paid by Aroostook County shippers with the cost of operating a private or cooperative fleet, estimated truck-operating costs must be established. Table 15 shows these estimated costs broken down by activity area.

It is difficult to estimate accurately private-fleet costs due to individual operating variables of miles run per year, drivers' wages, and fuel costs. Fuel costs have increased severely since the first of the year and have doubled in some areas over the last year.

A cost of $.83 per running mile may seem high. However, recent increases in cost of fuel alone have added $.10 per mile to normal operating costs. The cost estimates for private-fleet operations compare very closely with the August 1979 USDA "Fruit and Vegetable Truck Cost Report," which shows 83.4 cents per mile for owner-operators (see appendix 10).

Generally, if costs are much more than this, something is wrong. If much less, not all costs are being included.

Essentially, the only variable between loaded- and empty-per-mile cost is the tires. Fuel, driver, and all other costs remain the same.

Table 16 shows the estimated per hundredweight cost of operating a private fleet to some of the major market areas from Presque Isle. The table is based on a cost of $.83 per running mile.

With the exception of Florida, the one-way cost per hundredweight shown in table 16 is less than the standard or most common rate paid January through May 1979, as shown in table 13. The costs, including the empty return, are considerably higher, and in the case of Florida, they are two and one-half times higher than the current standard rate.

Rate differences show how backhauls can affect operating costs.

In private- and cooperative-fleet operations it is necessary for the truck to return to base for its next load. Therefore, in costing out an operation, round-trip miles must be used. A trip from Presque Isle to Boston involves round-trip miles of 776 at $.83 a running mile, not just 388 one-way miles.

Table 17 shows the percent of loaded-return miles necessary for a private fleet to equal the standard rates paid in early June 1979.

Because of the limited tonnage available for backhauls to Presque Isle and the rates paid, a cooperative fleet of trucks could only show a positive return on investment if it carried return hauls, for at least a part of the distance, at rates considerably higher than those paid for the southbound potato move.

From this analysis it is obvious that independent truckers serving the Maine potato industry are not covering their costs. To compound the problem, most truckers are paying truck brokerage fees of from 6 to 10 percent. This means that if they continue hauling at the current rates many of them soon will be out of business. Among other things, the rate does not provide enough revenue to establish a depreciation reserve for replacing the equipment when it is worn out.

The truckers who do not go out of business will be those who are: (1) able to subsidize their potato traffic from backhaul revenues, or from other more profitable hauls; and/or (2) are overloading to increase revenue. Neither of these two activities can be considered a firm foundation for serving markets properly, even on a short-term basis.

An agricultural cooperative, operating under Subchapter II, Title 49 U.S.C Section 10526 (a)(5) would be the kind of organization best suited for an owned- or leased-trucking operation. Section 10526 (a)(5) was formerly Part II of the Interstate Commerce Act, Section 203 (b)(5). One requirement for forming an agricultural cooperative is that all

Table 16--Estimated private-fleet potato truckload cost--Presque Isle, Maine, to selected destinations 1/

| Destination | One-way miles 2/ | Load cost one-way | Cost/cwt. one-way 3/ | Round-trip cost/cwt. empty return | Standard rate paid |
|---|---|---|---|---|---|
| Boston, Mass. | 388 | $332.04 | $ .72 | $1.44 | 1.15 |
| New York City, N.Y. | 590 | 489.70 | 1.09 | 2.18 | 1.75 |
| Philadelphia, Pa. | 686 | 569.38 | 1.27 | 2.54 | 1.95 |
| Baltimore, Md. | 778 | 645.74 | 1.43 | 2.86 | 2.05 |
| Washington, D.C. | 815 | 676.45 | 1.50 | 3.00 | 2.10 |
| Richmond, Va. | 920 | 763.60 | 1.70 | 3.40 | 2.20 |
| Pittsburgh, Pa. | 954 | 791.82 | 1.76 | 3.52 | 2.35 |
| Cleveland, Ohio | 976 | 810.08 | 1.80 | 3.60 | 2.35 |
| Jacksonville, Fla. | 1,522 | 1,263.26 | 2.81 | 5.62 | 2.35 |
| Orlando, Fla. | 1,661 | 1,378.63 | 3.06 | 6.12 | 2.40 |
| Miami, Fla. | 1,870 | 1,552.10 | 3.45 | 6.90 | 2.65 |

1/ $.83 per running mile.
2/ Household Goods Mileage Guide No. 11.
3/ 45,000-pound load assumed.

members must be producers. Each member must be connected directly with some type of farming activity.

This type of organization would allow shipping both table-stock and frozen potatoes outbound and would provide for backhaul of nonmember exempt commodities (up to 50 percent) and nonmember nonexempt commodities (up to 15 percent). See the section on organizational structures for more detailed information.

If only table-stock potatoes were to be carried, truckers then could be handled under the agricultural commodity exemption, Title 49 U.S.C. Section 10526 (a)(6) (formerly 203(b)(6)), as a simple partnership.

Table 17--Percent of loaded-return miles required to break even with current rates charged on potatoes from Presque Isle, Maine, to selected destinations, June 1979 1/

| Destination | Standard rate cwt. | Percent loaded-return miles required for break-even |
|---|---|---|
| Boston, Mass. | 1.15 | 25 |
| New York City, N.Y. | 1.75 | 25 |
| Philadelphia, Pa. | 1.95 | 30 |
| Baltimore, Md. | 2.05 | 40 |
| Richmond, Va. | 2.20 | 55 |
| Pittsburgh, Pa. | 2.35 | 49 |
| Cleveland, Ohio | 2.35 | 53 |
| Jacksonville, Fla. | 2.35 | NA 2/ |
| Miami, Fla. | 2.65 | NA 2/ |

1/ Return-trip rates assumed at same level as potato shipments.
2/ Requires higher rate than potatoes for break-even.

## JOINING A COOPERATIVE TRUCKING ASSOCIATION

The alternatives for utilizing the agriculture cooperative exemption, Section 10526(a)(5) (formerly Section 203 (b)(5)) of the Interstate Commerce Act, are either to form a trucking cooperative or to join an already existing one. The preceding section analyzed the advantages and disadvantages of forming a trucking cooperative. This section will discuss the merits of joining an existing trucking cooperative.

The advantages are:

1. Instant startup.
2. Established management team.
3. Little, if any, financial risk.
4. Established volume of freight.
5. Member-controlled organization.
6. Agreed-upon service level.

To explore this alternative we discussed the possibility with a trucking cooperative currently operating out of Florida. Florida was chosen due to its peak shipping period of October 15 to April 15, coordinating perfectly with the peak potato season. By matching these flows it can help to facilitate a generally full north-south truck movement.

The trucking cooperative indicated that the southbound potato movement would work well with its traffic flow and would enable it to get at least a portion of its piggyback and highway trailers loaded back south.

This cooperative works on the basis of cost of operation. Since it is nonprofit, any margin at the end of the year is returned to its members in the form of patronage refunds which historically have run between 5 and 6 percent. Rates quoted by the cooperative

Table 18--Comparative truck rate, independent operator versus proposed cooperative truck, June 1979

| Presque Isle to: | Rates paid, independent truckers | Proposed rates, cooperative truckers 1/ |
|---|---|---|
| | Dollars per hundredweight | |
| Boston | 1.15 | 1.20 |
| New York City | 1.75 | 1.80 |
| Philadelphia | 1.95 | 2.00 |
| Baltimore | 2.05 | 2.10 |
| Washington, D.C. | 2.10 | 2.25 |
| Jacksonville | 2.35 | 2.94 |

1/ Rate includes both fresh and frozen.

mid-June are compared in table 18 to e open-market truck rates that were id at that time.

Considering a possible 5-percent ar-end patronage refund, the proposed operative rates are quite similar to at was paid in mid-June. The notable ception is Jacksonville, where the operative rate reflects actual cost of e one-way haul and the independent rate flects the willingness of truckers to to Florida for a lower rate in order pick up a northbound load at a higher e.

To be able to work with a cooperative icking organization operating under the tion 10526 (a)(5) exemption it will be essary to:

1. Form a cooperative and put one son in charge of coordinating the bound cooperative shipments.

2. Establish a centralized t-loading system.

It is unlikely that an existing icking cooperative would be willing to chase equipment necessary to handle a or part of the movement without a firm mitment on the part of the shippers. way to establish the necessary mitment on both sides would be for the ppers to lease the trailers and lease them to a cooperative transpor- ion company for the monthly lease plus 0-percent upcharge. If the leased ilers were either new or in good used dition, the truckers might be willing perform necessary inspections, ntenance, and pretrip cleaning.

In choosing a cooperative trucker h which to work, it is important to e a thorough investigation to ermine the organization's reliability.

Motor vehicles operated and controlled by cooperative associations as defined in the Agricultural Marketing Act of 1929, as amended, and federations of such cooperative association, as set forth in Section 10526(a)(5) Subchapter II, of the Interstate Commerce Act, and as amended by Public Law 90-433, enacted July 26, 1968 (49 U.S.C. 303 (b)) are exempt from economic regulation by the Interstate Commerce Commission.

Unfortunately, there have been instances in the past when cooperatives or organizations claiming to be cooperatives have not operated strictly within the meaning of the law. Therefore, it is important to evaluate operations of the prospective cooperative associations.

Reference should be made to the Act for details, but briefly, cooperative associations can haul up to a total of 49 percent nonmember tonnage, of which a total of only 15 percent can be nonexempt.

This means that if the members of a cooperative association are not located in a strategic geographical area in which to provide complete backhauls for their association, the association then can backhaul a maximum of 15-percent nonmember nonexempt tonnage.

The use of the word backhaul is important since all nonmember business must be "incidental" to the normal operations of the association.

To determine if a cooperative association is operating within the law it would be helpful to:

1. Review the membership list and discuss it with reputable cooperative members.

2. Identify the members who are on the board of directors and personally

contact them for information about the association.

3. Ask for a copy of the bylaws and examine them to see if the association is indeed a cooperative.

4. Ask for a report from the association, certified by an officer, showing the (a) total tonnage hauled, (b) total nonmember tonnage hauled, and (c) total nonmember nonexempt tonnage hauled in the last year. Should the decision to join be made, these certified reports should be requested on a regular basis.

We want to emphasize: first, that cooperatives enjoy a special transportation resource which they can and should use to their fullest extent; and second, that members of cooperative trucking associations are responsible for making certain that their associations are operating within the meaning of the law.

Contract trucking arrangements for both frozen and fresh potatoes may include providing aid to help someone get into the trucking business--by supporting his request for operating rights, providing equipment financial backing, and a guaranteed volume of business. An alternative arrangement may be a simple informal understanding with an existing trucking firm.

Contracting can provide the following advantages:

1. An assured volume of business which can enable the contractor to develop backhauls and spread his costs over a larger base.

2. Both shipper and carriers must benefit from working together; if not, the arrangement will not succeed.

3. Service capabilities of a private fleet can be available without the administrative headaches of private carriage.

4. Contracting can relieve the shipper of the financial risk of operating his own fleet.

Contracting is not a panacea for every transportation problem and it most certainly cannot provide service at below cost. However, it does provide a means for the trucker and shipper to work together for their mutual benefit.

Section 203(15) of the Interstate Commerce Act specifies that a contract carrier must provide "either (a) for the furnishing of transportation services through the assignment of motor vehicles for a continuing period of time to the exclusive use of each person served, or (b) for the furnishing of transportation services designed to meet the distinct need of each individual customer."

Contract carriage, then, is an alternative which comes very close to providing the kind of service normally thought of as coming only from private carriage. The success of a contract arrangement depends on the terms of the contract, the commitment by both parties to the contract, and the benefits it offers to both parties. If it is not mutually profitable, then it will certainly fail.

Common-carrier and other rates often are established by averaging the service requirements of a great many shippers with different traffic consists. Contract rates sometimes can reduce transportation charges by reflecting the actual cost of mutually agreed-upon specific service. However, this can be a disadvantage in circumstances where the cost of service is higher than average.

To set up a contract-carrier operation, it is necessary to obtain authority from the Interstate Commerce Commission (ICC). For common carriage it is necessary to establish "public convenience and necessity." With contract carriage "it is necessary to find only that it is consistent with the public interest." "The term consistent with the public interest (means) not contrary to the public interest."

The Interstate Commerce Commission Act is very specific as to what is in the public interest with regard to contract carriage. Section 209(b) of the Act contains a 5-point test to be met by applicants for contract-carrier permits. It requires the Commission to consider "the number of shippers to be served by the applicant; the nature of the service proposed; the effect which granting the permit would have upon the services of the protesting carriers; the effect which denying the permit would have upon the applicants and/or its shipper; and the changing character of that shipper's requirements."

In general, obtaining contract-carrier rights has not been overly difficult, particularly when the shipper has supported the application. More recently, the Commission appears to want to grant entry permits whenever possible.

There are several steps to establishing a proper working contract, including:

1. Defining service requirements. These would include seasonal projections of the volumes by market area, type of response needed for picking up loads (within __ days or __ hours), transit time (first, second, or third morning), reliability of scheduled arrival time (within __ hours, plus or minus). The definition of needs should be written in such a way that there is a clear idea of what is required, but leaves ample room for negotiating.

2. Finding a carrier. Seeking a contract carrier should be done with great care. In working with common carriers or independent owner-operators a shipper can switch back and forth with ease on a day-to-day basis, and if problems arise it is of no great consequence because it will have affected only one, or at the most, a few shipments. This will not be true with contract carriage. With common carriage there are generally only a few who have the authority to provide the service. In searching for a contract carrier it is doubtful that there will be any with existing authority. This means that whoever is selected will need to obtain operating authority. This opens up possibilities to the entire motor carrier industry.

3. Asking for bids. The more formal approach is to advertise in trade publications, newspapers, etc., for carriers who are interested in bidding. However, it is more common to select certain individuals or companies known to the shipper and to ask them to consider handling the movement on a contract basis. This establishes a more informal type of negotiation with carriers of known capabilities.

Advertising tends to open the field to some who may be looking for just such an opportunity. It also improves the possibility of finding a low bidder. A word of caution, however: the lowest bidder may not provide the most satisfactory overall arrangement.

4. Selecting a carrier. The options most likely will come from existing contract carriers wishing to expand their operations, common carriers who are interested in extending their activities, owner-operators who would like to develop a dependable volume of business, local delivery operators wanting to get into longer hauls, and private-carrier operators who would like to balance their single-company hauls with other compatible traffic.

Care should be taken in negotiating with common and contract carriers, as they already will have had considerable experience in negotiating agreements. With others who have not had the experience there could be some serious startup and operating problems.

5. Writing the contract. The contract would outline the obligations and responsibilities of both parties and would include:

a. A description of the services required, commodities involved, originations and destinations, minimum volume, and accessorial services.

b. A standard performance clause showing that the carrier agreed to receive and safely transport the items shown in paragraph (a) to the points in paragraph (a) and to deliver them as promptly as possible. (This fixes liability for in-transit damage on the carrier and helps to insure prompt delivery).

c. A paragraph that the carrier agrees to conform to the rules, regulations, and requirements of the Interstate Commerce Commission and other regulatory bodies with jurisdiction over motor vehicle transportation. (This protects the shipper against complicity in case of violation and will allow for breach of contract, if desired).

d. A provision for shipments in excess of the minimums in (a) to be covered under the same terms and conditions.

e. The requirement that the carrier keep in force public liability, property damage, cargo, and worker's compensation insurance for an amount and with such reliable companies as will be approved by the shipper and State regulatory bodies. The insurance should be endorsed to cover the interests of the shipper.

f. A note that the employees of the carrier are exclusively carrier employees, and shall not for any purpose be deemed employees of the shipper.

g. Rates covering the services should be filed as an appendix in such a way that they can be changed without having to draw up a new contract.

h. A clause stating the term of the contract and an automatic renewal provision.

CONTINUE AS IS

i. A means for terminating the contract upon a 60-day written notice by either party.

Individual shippers or groups of shippers acting together to combine their volume may execute contracts. A cooperative shippers' association, organized under Part IV of the Interstate Commerce Act and utilizing the Section 402 (c)(1) exemption, would be ideally suited for this purpose.

The combined weight of the shippers' association would increase volume enough to make it attractive to the carriers.

Last and very important is the fact that presently most shipments are now handled through truck brokers. Contracting would eliminate the need for brokers on the portion of freight that is contracted. This would tend to increase truckers' revenue, reduce the freight bill, or both.

We do not consider this a viable transportation alternative. If there is to be a major effort to turn the fortunes of the Maine potato producer, a supplemental and reliable transportation system must be initiated to move these potatoes to market on a timely basis.

Between 1972 and 1978 the overall per capita consumption of potatoes increased from 119.4 pounds to 123.9 pounds. This increase is particularly significant when added to a 9.7 million population growth during the same period.

While these increases were taking place the number of potato loads moving out of Maine fell by 35 percent (from 29,900 to 19,412).

We do not know to what degree transportation problems are responsible for this drop. However, we do know that the market must be supported by a reliable transportation system.

By joining together, shippers can effect substantial improvements in their ability to get their products to market. Some changes can be made independently, but it is doubtful that many improvements can be made with either the railroads or truckers without a firm commitment and substantial volume.

Producers who wish to join together to market and distribute their products have several options open to them. One of the best known organizational structures that would fit alternatives described in this report includes the agricultural cooperative. By forming a cooperative, shippers can combine their volumes and act together to reduce risk and improve equipment utilization.

The cooperative structure can be used to:

1. Establish or join a cooperative trucking company operating under the cooperative exemption (49 U.S.C. 10526 (a)(5)).

2. Act as a freight forwarder operating under the 49 U.S.C. 10562(1) exemption.

3. Act as a shippers' association operating under the 49 U.S.C. 10562(3) and (4).

4. Act as a farmer cooperative to establish contract-carrier agreements.

Setting up an organization to transport or arrange for transportation of goods in interstate commerce will require familiarity with the regulatory statutes. Several exemptions are discussed that may be available for the systems recommended. No legal
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Agricultural producers shipping their products in interstate commerce have three exemptions from transportation economic regulation available to them. First is the agricultural cooperative exemption in Part II of the Interstate Commerce Act of 1887 (Part II was added in 1935 and applies to motor carriers). Second and third are exemptions from regulation as freight forwarders in Part IV of the Act (Part IV was added in 1942). Background is given in National Motor Freight Traffic Association v. United States, 253 F. Supp, 661 (D.D.C. 1966). Section 402(b) of Part IV applies to agricultural cooperatives and Section 402(c) applies to shippers' associations. A properly organized and operated agricultural cooperative can fit any of these three exemptions, with the choice depending on the system's needs, and the advantages and disadvantages of each exemption.

Public Law 95-473, October 17, 1978, was passed to revise, codify, and enact without substantive change the Interstate Commerce Act and related laws as Subtitle IV of Title 49, United States Code, "Transportation." The following will reference the Section and Part numbers of the Act as passed by the 95th Congress.

Subchapter II, Revised Interstate Commerce Act

Title 49 U.S.C. Section 10526(a)(5) lists a number of exemptions from Subchapter II requirements relating to certificates of public convenience and necessity for motor carriers and to other regulation of motor carriers under Subchapter II. Exemption of section 10526(a)(5) states that:

The Interstate Commerce Commission does not have jurisdiction under this subchapter over:

"(5) a motor vehicle controlled and

operated by a cooperative association (as defined by section 1141j(a) of title 12) or by a federation of cooperative associations if the federation has no greater power or purposes than a cooperative association, except that if the cooperative association or federation provides transportation for compensation between a place in a State and a place in another State, or between a place in a State and another place in the same State through another State--

(A) for a nonmember that is not a farmer, cooperative association, federation, or the United States Government, the transportation (except for transportation otherwise exempt under this subchapter)--

(i) shall be limited to transportation incidental to the primary transportation operation of the cooperative association or federation and necessary for its effective performance;

(ii) may not exceed in each fiscal year 15 percent of the total transportation of the cooperative association or federation between those places, measured by tonnage; and

(iii) shall be provided only after the cooperative association or federation notifies the Commission of its intent to provide the transportation; and

(B) the transportation for all nonmembers may not exceed in each fiscal year, measured by tonnage, the total transportation between those places for the cooperative association or federation and its members during the fiscal year";

The Agricultural Marketing Act of 1929, as amended (12 U.S.C. section 1141j), from which the basic definition of a cooperative is drawn, reads as follows:

"The term 'cooperative association' means any association in which farmers act together in processing, preparing for market, handling, and/or marketing the farm products of persons so engaged, and also means any association in which farmers act together in purchasing, testing, grading, processing, distributing, and/or farm business services. Provided, however, that such associations are operated for the mutual benefit of the members thereof as such producers or purchasers and conform to one or both of the following requirements:

"First. That no member of the association is allowed more than one vote because of the amount of stock or membership capital he may own therein; and

"Second. That the association does not pay dividends on stock or membership capital in excess of 8 per centum per annum.

"And in any case to the following:

"Third. That the association shall not deal in farm products, farm supplies, and farm business services with or for nonmembers in an amount greater in value than the total amount of such business transacted by it with or for members. All business transacted by any cooperative association for or on behalf of

> the United States or any agency or instrumentality thereof shall be disregarded in determining the volume of member or nonmember business transacted by such association."

Regulations issued by the ICC further define the limits of the exemption, practices within those limits (49 C.F.R. sections 1047.20 - 1047.23 and proposed regulations in 43 Fed. Reg. pp. 2396-2400 (Jan. 17, 1978)). Growth of a few "sham" cooperatives that are not true agricultural cooperatives but that try to come within the exemption has forced the Commission to become more stringent in the administration of these regulations. However, legitimate agricultural cooperatives should have no difficulty meeting the requirements.

Possible makeup of association membership in the proposed system makes one requirement in the definition of an agricultural cooperative particularly important: To qualify for the exemption, all members must be farmers. Presence of any nonfarmer members will destroy the exemption.

In addition, restrictions on transportation by qualified agricultural cooperatives are important to note. The cooperative is not permitted to transport more (by tonnage) for nonmembers than for members.

The cooperative is also limited to 15 percent of its transportation for nonmembers who are not agricultural producers, and such transportaton must be incidental to its primary transportation operation. These specific restrictions must be added to the requirements for true cooperative operation.

The agricultural cooperative exemption found in Subchapter II of the ICC Act (49 U.S.C. 10526(a)(5) would be ideally suited for organizing, if it were not so restrictive. The cooperative exemption, in limiting that nonmember nonexempt volume, restricts the possibility of obtaining backhauls of general commodities to only 15 percent. This limitation forces the shippers to return empty trailers at considerable expense and wasted energy.

Subchapter IV, Interstate Commerce Act

Subchapter IV of the Interstate Commerce Act deals with freight forwarders. Freight forwarders are defined in the Act to mean any person,

> "(8)...holding itself out to the general public (other than as an express, pipeline, rail, sleeping car, motor, or water carrier) to provide transportation of property for compensation and in the ordinary course of its business--
>
> (A) assembles and consolidates, or provides for assembling and consolidating, shipments and performs or provides for break-bulk and distribution operations of the shipments;
>
> (B) assumes responsibility for the transportation from the place of receipt to the place of destination and;
>
> (C) uses for any part of the transportation a carrier subject to the jurisdiction of the Interstate Commerce Commission under subchapter I, II, or III of chapter 105 of this title."

Freight forwarders are required to obtain a permit to operate and are subject to ICC regulation. There are organizations, however, exempt from Subchapter IV regulation. One is an agricultural cooperative defined by the

same statute referred to in Subchapter II.

That exemption is found in section 49 U.S.C. 10562(1).

"The Interstate Commerce Commission does not have jurisdiction under this subchapter over--

> (1) service provided by, or under the direction of, a cooperative association (as defined by section 1141j(a) of title 12) or by a federation of cooperative associations if the federation has no greater power or purposes than a cooperative association."

The requirement of total-farmer membership remains the same as in the Subchapter II exemption.

A second Subchapter IV exemption is not restricted to farmer cooperatives and is available for use by an association whose members are nonfarmers or, of course, a mixture of farmers and nonfarmers. The exemption is found in 49 U.S.C. section 10562(3) and (4). It reads:

"The Interstate Commerce Commission does not have jurisdiction under this subchapter over--

> (3) the service of a shipper or a group of shippers in consolidating or distributing freight on a nonprofit basis, for the shipper or members of the group to secure carload, truckload, or other volume rates; or
>
> (4) the service of an agent of a shipper in consolidating or distributing pool cars when the service is provided for the shipper only in a terminal area in which the service is performed."

This provision (specifically subsection (3)) appears to fit the needs of the grower-shipper group. In addition, it permits flexibility in the membership required by the nature of prospective participants in the recommended system. Because the grower-shipper group may find Subchapter IV of particular use, the position of the ICC and the courts should be considered carefully.

Subchapter IV applies only to freight forwarders. Features of such a function are outlined below. A shippers' association must have certain characteristics to be exempt from freight-forwarder regulations. Those are discussed briefly. Also, comments a made on the typical operation of su association and the formalities of organization.

The first requirement for Subch IV treatment is that the activities individual or association actually ar those of a freight forwarder. The statute quoted lists three requirement Clause A describes the overall patter freight forwarding. Clause B specifie that the freight forwarder takes the responsibility for transporting from the initial point of recei final destination. Finally, C requires that a common carrier for some part of the transporta origin to destination.

A typical freight-forwarding operation is described by the Dist Court in National Motor Freight T Association v. United States, 25 Supp. 661 (D.D.C. 1966).

"Freight forwarders collect and consolidate less-than-carload or less-than-truckload shipments and secure common-carrier transportat for the long-haul movement of property owned by individual shippe

by carload or truckload. In accomplishing this, the forwarder consolidates several small, less-than-truckload shipments into a full truckload or carload quantity which then moves over the major portion of the journey by common carrier at the lower truckload or carload rate. In reality, what may appear as a single operation actually involves three distinct phases, each phase involving a different common carrier. First, the goods of each individual shipper are carried to a central consolidation point. Second, the aggregated property then is transported over the line haul by a common carrier to a break-bulk or distribution point; and finally, the goods are moved from the distribution center to the various ultimate consignees. Without the intervention of the forwarder each small individual shipper would be required to deal with the several carriers involved, paying each carrier the more expensive less-than-truckload or less-than-carload rate for the entire movement from pickup point to the final delivery point. The freight forwarder offers the shippers a more expeditious, comprehensive transportation service at a lesser cost. The details of arranging transportation are completely cared for by the forwarder, and some savings are passed on to the shipper through the differential between full-capacity truckload and carload rates over the line haul and the more expensive less-than-truckload or less-than-carload rates over the line haul."

Conditions listed in the statute are not mere suggestions for convenient operation. They are legal requirements. Each condition must be separately satisfied before Part IV can be used.

An association acting as a freight forwarder must perform at least the essential functions described in Clause A. A forwarder that operated at a single terminal point did not qualify because it did not perform enough of those essential functions (National Motor Freight Traffic Association v. United States, 242 F. Supp. 601 (D.C. 1965)). A shippers' association may arrange with agents to perform certain of the functions (Columbia Shippers and Receivers Association v. United States, 301 F. Supp. 310 (D. Del. 1969)). A shippers' association may utilize terminals at the shipment's point of origin and destination without being subject to regulation. Also, the agencies that provide for the assembly, consolidation, and distribution of the small shipments are not carriers requiring licenses (Gilbert Carrier Corporation v. Receivers and Shippers, Inc., 350 F. Supp. 1119 (C. D. Cal. 1972)). Under some circumstances members themselves may perform some of the functions (National Motor Freight Traffic Association v. United States, 205 F. Supp. 592 (D. D. C. 1962)).

The true freight forwarder also must assume responsibility for the transportation. An association that does not take the responsibility from point of receipt to point of destination cannot qualify as a freight forwarder (National Motor Freight Traffic Association v. Delaware Valley Freight Terminal, 323 I.C.C. 560 (1963), aff'd, National Motor Freight Traffic Association v. United States, 242 F. Supp. 601 (D. D. C. 1964)).

Finally, the freight forwarder must use a common carrier for part of the transportation. In one case an association that consolidated shipments but transported them in its own leased vehicles to the final destination was

held not to be a freight forwarder (I.C.C. v. International Shippers Association of New Jersey, Inc.,249 F. Supp. 66 (D. N. J. 1965), Aff'd, 363 F. 2d 878 (3d. Cir. 1966)).

Shippers' Association Requirements

When the basic requirements for coverage as a Subchapter IV freight forwarder are met, the exemption for Subchapter IV regulation extends to those shippers' associations that meet statutory requirements of 49 U.S.C. 10562(3). It should be noted that 49 U.S.C. 10562(3) and (4) are "clarifying" provisions rather than a true exemption from Part IV of the regulation. The definition of freight forwarder includes only those persons who offer themselves to the general public to transport or provide transportation as described in the statute. A shippers' association does not in fact do this, but serves only its members for their benefit. As stated in the House Committee on Interstate and Foreign Commerce Report No. 1172:

> "The definition of freight forwarder includes only those persons who hold themselves out 'to the general public' to transport or provide transportation of property for compensation, and only those who, in the ordinary and usual course of their business, perform or provide the performance of both the assembling and concentrating operations and the break-bulk and distributing operations in the through movement of property, and only those who assume a common-carrier responsibility for the transportation and safety of the property from point of receipt to point of destination."
>
> "The definition therefore draws a line of distinction which clearly excludes brokers, nonprofit associations of shippers, warehousemen, and pool-car operators, as those persons normally operate, since such persons do not do all of the things required under the definition to constitute a freight forwarder. In order to make absolutely sure, however, that the definition cannot by construction be held to cover shippers, groups of shippers, and nonprofit associations of shippers, consolidating or distributing freight for themselves or their members, or to cover warehousemen, pool-car operators, and other shippers' agents engaged in consolidating or distributing pool cars, and not assuming responsibility for the through movement of the property, subsection (c) was included in this section."

Physical operators cannot distinguish between a regulated freight forwarder and an unregulated shippers' association. The distinguishing features are found in the relationship between the organization and those whom it deals. The ICC in Atlanta Shippers Association--Investigation of Operations, 322 I.C.C. 273 (1964), said:

> "In order to properly pinpoint those considerations determinative of the status under part IV of a given transportation operation actually conducted by a self-styled shippers' organization, the functional similarities and differences between the services provided by a forwarder and the operations of a lawful nonprofit group or association of shippers need to be noted. Thus, both the freight forwarder and shippers' association lawfully operating under the provisions of section 402(c)(the previous reference for this exemption prior to revision of the Act) ordinarily assemble and

consolidate or provide for the assembling and consolidating of shipmens; both normally perform or provide for the performance of break-bulk and distributing operations with respect to such consolidated shipments; and both utilize, for the least part of the transportation of such shipments, the services of a carrier or carriers subject to part I, II, or III of the Act. In essence, then, the shipper obtains from the nonprofit group or association of which it is a member the same physical transportaton service as that which it would receive from any recognized forwarder. The functional distinction between regulated and nonregulated consolidating and distributing operations is therefore to be found not in their physical service characteristics which are thus identical for all practical purposes. Instead, the regulated freight forwarder is distinguished by statute from the nonregulated shippers' organization by the fact that it holds itself out to the general public, for compensation, to deliver safely at destination those shipments entrusted to its care."

"Whether an activity conducted by a shippers' group or association and otherwise meeting the physical requirements of a forwarding service is held out to the general public for compensation so as to constitute the group or association, a vendor of forwarding service, i.e., a freight forwarder ultimately and necessarily depends upon the factual relationship between the group or association performing the operation and the recipients or beneficiaries of such operation."

The shippers' association is a membership operation, distinguished from other organizations by the agency relationship between the members and the group. The shippers' association is not an organization that sells a service to members, it is an agent of the members and it acts solely on their behalf.

The statute quoted above gives only brief statements about qualifying features. The association must operate to secure benefits of carload, truckload, or other volume rates; it must operate to obtain those benefits for its members; and it must operate on a nonprofit basis. A number of other principles, however, are implied by those statements and some have been elaborated by the Commission and the courts. The following discussion cannot cover all States and implied requirements for 49 U.S.C. 10562(3) and (4); it merely suggests ideas to consider in forming an exempt freight-forwarder shippers' association.

For summary purposes there are 4 primary characteristics a shippers' association must possess to receive 49 U.S.C. 10562(3) status in Subchapter IV. First, the association must be under the control and direction of association members. Second, essential risks and burdens of the enterprise must be borne by the association. Third, the association must be operated for benefit of members only. Finally, the association must be operated on a nonprofit basis.

Various decisions have listed member control and assumption of risks and burdens as the major point of contention, although member benefit and nonprofit qualification characteristics are required. In fact, the four principles cannot be separated. Total operation of the association must meet all requirements. If the association does not reflect one of the principles, it will very likely not meet others.

From the point of view of shippers and growers contemplating a shippers' association, the principle of member control is paramount. Brief exposure to Commission decisions and court cases suggests that the first step in the failure of a shippers' association to conform to the law is lack of true member control.

A Federal district court in the case C-Line, Inc. v. United States, 376 F. Supp. 1043 (D. R. I. 1974), stated: "There is a well-defined relationship between an exempt shippers' association and its members, which is characterized by control of membership over transportation activities of the association." As stated in Atlanta Shippers Association--Investigation of Operations, 316 I. C. C. 259 (1962):

> "If any person or persons, other than the shipper-members, themselves, possess even the right or privilege to control, or in fact actually control, the freight consolidation and distribution services, it is they, and not the shippers, who through the purported association are performing such activities; in such event, the operation being conducted in the name of the shippers or in the name of their group or association is not within the exclusion of section 402(c) but is, in substance, a common-carrier freight-forwarding service for which authority is required. In these circumstances, the controlling persons will be regarded as having assumed the necessary responsibility for the transportation from point of receipt to point of destination within the meaning of the freight-forwarder definition."

Conscious delegation of all responsibility is also a loss of control. "Where it is shown that the association members, though enjoying the benefits of a complete transportation service at volume rates, have not retained effective control over the movement of their freight but, instead, have delegated all responsibility therefore to purported agents or employees, then for all practical purposes, they have invested the latter with the fundamental characteristics of an included entrepreneur, the operations of which, if otherwise within the definition of a freight forwarder, are subject to the Act's licensing requirements." New Orleans Shippers Association, Investigation of Operations, 323 I. C. C. 619 (1964).

A clear example of the member-control problem is given in Freight Forwarders Institute v. United States, 263 F. Supp. 460 (S. D. N. Y. 1967). The association in question was Piggy-Back Shippers Association of Florida, organized by a Mr. Helin to use truck-on-flatcar services. Helin contacted the initial group of shipper-members, drew up the association's articles and bylaws, called the organizational meeting, actually appointed the "elected" members of the board of directors, and obtained a contract as general manager with compensation based on total tonnage shipped. Thereafter Helin exercised a free hand, unencumbered by effective control by the board of directors, whose principal decision at board meetings amounted to approval of new membership applications secured by Helin. It was held that requisite membership control was lacking.

Dissatisfaction with Helin's operations led the members to take control of the association, hire a new manager, and operate as a proper association. At that point piggyback was no longer a "paper" association of the general manager's own design or a cloak under which an independent entrepreneur

was acting, and was held to be operating in conformance with 402(c) requirements.

The association must not permit others to assume risks and burdens of the enterprise. Responsibility for transportation from point of receipt to point of destination was not found in the association where "persons other than the shipper-members of the association bear the essential risks and burdens of the consolidating and distributing operations." Atlanta Shippers Association--Investigation of Operations, 316 I. C. C. 259 (1962). It was also stated:

> "The same conclusion clearly must obtain in those situations in which persons other than the shipper-members of the association bear the essential risks and burdens of the consolidating and distributing operations in question. Where, however, the shipper-members themselves, to the exclusion of all others, control, direct, and dominate the activities in question and assume jointly and severally all the risks and burdens of conducting such operations, such consequences cannot be said to result and the operations would be of the character specifically safeguarded by section 402(c) of the act."

The assumption of risk and responsibility is associated closely with control. In Columbia Shippers and Receivers Association v. United States, 301 F. Supp. 310 (D. Del. 1969), a challenge to assumption of risk was defeated when the court stated that retention by members of the right to control and dominate the association is an indication that essential risks and burdens have not been passed on to third parties.

A shippers' association must be operated for the benefit of the members as described in the statute. Two requirements are tied up in this principle. Benefits must flow only to members, and benefits must be associated with transportation cost savings, not the profitable operation of a transportation system. The Commission in Atlanta Shippers Association--Investigation of Operations, 316 I. C. C. 259 (1962) summarizes the two requirements:

> "The essential predicate of any bona fide shippers' association is that the association, at all times and with respect to each less-than-truckload or less-than-carload shipment moving in its service, must act as agent for its lawful shipper-members in reducing the 'transportation costs to the members through savings effected in cooperation with other members who likewise employ the association as transportation agent.' In other words, the avowed purpose, and the practical result, of an association's combining freight of its members must not be to obtain any benefit for the shipper other than the lowering of the transportation costs of the members through savings effected in cooperation with other members 'who likewise employ the association agent.' As a consequence, in order to avoid being characterized as a 'for compensation' or for-hire freight forwarder, a group or association of shippers must affirmatively stand aloof to the lure of a public calling and may now lawfully handle nonmembers' shipments which have no connection with, nor fundamental relation to, the business of its shipper-members. Whenever the freight-consolidating and distributing services performed in connection with nonmember shipments by the group or association of

shippers is supplied with a purpose to profit from the effort itself as distinguished from a purpose merely to obtain for its members the benefits of carload, truckload, or other volume rates, then the operation is, in substance, a common-carrier freight-forwarding service for compensation."

The nonprofit nature of a shippers' association exempt under 49 U.S.C. 10562(3) is explicit. The nonprofit characteristic also flows from the nature of the association and its relationship to its members. In a case that questioned the use of f.o.b. shipping, the Commission held that such a practice destroyed the nonprofit status because the association did not take responsibility for shipping costs, the benefits being a profit to the association. In its rejection of that view, the U.S. Supreme Court in United States v. Pacific Coast Wholesalers' Association, 388 U. S. 689, 70 S.Ct. 411, 94 L. Ed. 474 (1950) discussed the meaning of nonprofit operations. "(A lower court) considered as decisive that no shipments by the association were ever undertaken except at the behest and for the benefit of a member. Looking to the agency between member and association, rather than that between buyer and seller, the court saw no reasonable grounds for ruling that the association was on a profit basis, or that it was holding its services out to the general public. We agree."

In a situation where nonmembers operated the association, a court scrutinized the substantial income received by those who did control the association. They listed as items of an expense account such things as entertainment, travel, sales promotion, and Christmas gifts. Though the association itself did not have a profit, the court said that "these expenses are typical of a profitmaking operation rather than a nonprofit shippers' association." Freight Consolidations Cooperative, Inc. v. United States, 230 F. Supp. 692 (S.D. N.Y. 1964).

Form of Organization

If the association of shippers meets the statutory requirements, the technical form of organization is not restricted. The choice of membership, unincorporated organization, or incorporated association is open. A corporation normally insulates its individual shareholders from liability beyond their investment. An argument was made that such insulation made it impossible for the association to meet the assumption of risk-and-burden rule. That argument, however, was not accepted by the Commission. The "fact of incorporation, standing alone, does not affect the status under Subchapter IV of otherwise lawful shipper-association operations." Atlanta Shippers Association--Investigation of Operations, 322 F.C.C. 273 (1964). The Commission added:

"We do not mean to say, however, that the circumstance of incorporation, and the fact surrounding such incorporation, are not something to be weighed in ascertaining the basic nature and true status of purported shipper-association operations. We will go behind the corporate form in any case to establish the essential facts. These facts, like all others attendant to a given operation, must be weighed and considered together in order to arrive at a correct assessment of the "total" fact situation. And where it appears that the corporate form of enterprise has been purposely chosen as a subterfuge or device by which to escape regulation under the act, appropriate weight will be accorded that fact in

finding the operations in question to be those for which authority is required."

Requirements of a shippers' association are entirely compatible with the kind of organization commonly called a cooperative. In fact, one court has said, "A true shippers' association is a nonprofit cooperative; the members bear the burdens as well as share the benefits of its operations. They bear the expenses of the consolidation and distribution operation as well as sharing in any surplus monies that remain in the association's treasury at the end of the year." Freight Consolidators Cooperative, Inc. v. United States, 230 F. Supp. 692 (S.D. N.Y. 1964).

Example: After discussing qualifications and requirements for a shippers' association exempt under 49 U.S.C. 10562 (3), a description of a properly operating association may be useful. Such a description was given by a Federal district court in Dal-Worth Shippers Association v. United States, 211 F. Supp. 590 (N.D. Texas 1962). "It was organized (in 1949) as a membership organization under the sponsorship of a group of merchants in Dallas for the purpose of reducing the cost of their transportation from their principle sources of supply. At a later date, the privilege of membership was extended to merchants in the Fort Worth area."

"The Association does not issue shares of stock. Membership is evidenced by a letter of acceptance of a member's application. Services of the association are rendered for members only. There are about 200 members at this time. Control of the association is exercised by a board of directors consisting of 21 persons, representing about 10 percent of the active membership, and an executive committee consisting of 7 members. Under present bylaws, the maximum membership of the board of directors is 25. A manager is employed who oversees the clerical work which constitutes the day-to-day operation of the association. Bylaws permit admission of new members to the association by a majority vote either of the board of directors or the executive committee, although in normal practice a prospective member will be rejected or admitted by unanimous action. No members are solicited by the association or any of its officers. The directors all serve without pay."

"The charges of the association are applied uniformly to all members, but vary as to individual shipments according to their contents and weight. Charges are fixed at a level which returns the cost and tax on the underlying transportation by rail and motor vehicle, consolidating charges, and overhead including depreciation, rent, salaries, telephone, office, and any other costs. If at the end of a 12-month operating period association revenues exceed the expenses, then pursuant to the association bylaws, the excess is prorated on the basis of tonnage and distributed back to the members. Refunds have never exceeded 1 percent of revenue for any operating period and have averaged 1/2 of 1 percent."

Once the physical and economic requirements of the selected system have been worked out, the precise nature of the organization most suitable to achieve the desired ends can be designed. The many decisions on incorporation, taxation, and so forth, will have to be made based on needs and permissible bounds of operation. Such decisions and specific steps toward implementation should be made in close consultation with a knowledgeable attorney.

If it is decided to form an organization to carry out a coordinated shipping program, professional management would be a key element. Transportation is a manageable cost item in the distribution system, and due to its relatively large share of the total cost, deserves more attention than normally accorded.

A professional transportation manager, depending on the type of program selected, would be responsible for:

1. Selection and continued evaluation of different transportation modes.
2. Analysis of freight rates and bills.
3. Filing of claims.
4. Development of maintenance programs.
5. Evaluation of equipment specifications.
6. Management of proprietary equipment for greatest utilization.
7. Expedition of shipments and early return of equipment.
8. Customer service.
9. Location of supplemental carriers during peak shipping periods.

Considering that close to 100 truckloads of potatoes leave points in Maine each day during the heavy shipping months, and further considering that at today's prices a truck tractor and refrigerated trailer costs nearly $100,000, there is a large capital investment required to move potatoes to market. The magnitude of this investment certainly deserves the attention of a full-time professional manager.

PROGRAM COMMITMENT

Commitment is another key element in putting together and operating a successful program. Regardless of the type of organization and operation, before proceeding very far it will be necessary to obtain a firm commitment in the form of guaranteed financing and/or use from grower-shippers, carriers, and receivers. Without this firm commitment the program would fail during the early stages for lack of support.

The type of commitment needed on the part of the users would include:

Shippers

--Agreement to share in the responsibility of organizing and financing.

--A minimum guaranteed annual volume.

--A minimum guaranteed weekly or monthly volume.

--Agreement to abide by the decisions of the membership.

Truckers and/or Railroads

--Commitment to provide an agreed-upon service.

--Commitment to provide service at an agreed price (contract trucking and railroads).

--Agreement to provide sufficient equipment to meet service requirements.

Receivers

--Assurances of rapid unloading and releasing of equipment.

--Commitment to receive piggyback and/or railcar shipments, if applicable.

--Agreement to accept shippers' equipment.

Interviews with shippers indicated that, because of service problems in the past, it would be most difficult to obtain an agreement from the receivers to accept railcar or piggyback shipments. The best way to obtain receiver acceptance might be to demonstrate: (1) the railroads' firm commitment to service, (2) energy implications of rail versus truck transportation, and (3) problems of relying on a single-mode transportation system.

pendix table 1--Maine potato unload statistics, 41 cities, 55,000-pound load equivalents, 1978/79[1/]

| City | July | Aug | Sept | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | June | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ston, Mass. | 1.1 | 13.2 | 62.2 | 100.5 | 156.2 | 207.0 | 222.2 | 180.2 | 219.3 | 244.9 | 203.8 | 47.6 | 1658.4 |
| New York/ Newark, N.J. | 10.0 | 2.4 | 5.3 | 6.0 | 45.8 | 46.7 | 93.6 | 94.5 | 162.7 | 182.9 | 202.9 | 98.4 | 951.3 |
| Philadelphia, Pa. | 1.1 | -- | -- | 14.9 | 50.2 | 55.6 | 136.7 | 121.6 | 121.8 | 160.9 | 131.6 | 49.6 | 844.2 |
| Baltimore, Md./ Washington, D.C. | 2.0 | -- | -- | 3.8 | 23.1 | 24.4 | 64.4 | 45.4 | 80.0 | 78.5 | 85.5 | 28.5 | 435.6 |
| Providence, R.I. | -- | .9 | .9 | 4.7 | 21.1 | 19.1 | 21.6 | 21.3 | 53.5 | 81.3 | 44.0 | 23.1 | 291.5 |
| Miami, Fla. | 1.5 | -- | 2.5 | 16.2 | 20.0 | 47.3 | 46.5 | 26.2 | 32.0 | 27.3 | 30.5 | 18.0 | 268.0 |
| Pittsburgh, Pa. | -- | -- | -- | 7.1 | 19.8 | 26.4 | 33.3 | 36.0 | 38.0 | 40.7 | 62.0 | 1.6 | 264.9 |
| Dallas, Tex. | .7 | 2.9 | 14.8 | 18.0 | 95.3 | 5.8 | 32.9 | 34.9 | 16.0 | .7 | -- | -- | 222.0 |
| Cleveland, Ohio | -- | -- | -- | -- | -- | 5.8 | 11.6 | 43.3 | 22.4 | 40.7 | 29.1 | 6.5 | 159.5 |
| Albany, N.Y. | 4.0 | -- | -- | .7 | 9.6 | 22.6 | 23.5 | 24.9 | 22.9 | 27.8 | 18.0 | 4.7 | 158.7 |
| Atlanta, Ga. | -- | -- | -- | .9 | -- | .7 | .9 | -- | 6.0 | 22.7 | 12.5 | -- | 43.8 |
| Columbia, S.C. | -- | -- | .4 | -- | 3.8 | 5.3 | 8.2 | 1.6 | 1.5 | 7.6 | 5.8 | -- | 34.2 |
| Cincinnati, Ohio | -- | -- | .7 | -- | -- | -- | -- | -- | -- | 14.9 | 8.2 | -- | 23.8 |
| Detroit, Mich. | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.3 | -- | 9.3 |
| Buffalo, N.Y. | -- | -- | -- | -- | -- | -- | -- | .5 | -- | .5 | 4.0 | -- | 5.1 |
| Birmingham, Ala. | -- | -- | -- | 0.4 | -- | -- | -- | -- | -- | -- | 1.6 | 1.5 | 3.5 |
| Louisville, Ky. | -- | -- | -- | -- | -- | -- | -- | -- | -- | .7 | 1.5 | .3 | 2.5 |
| Chicago, Ill. | 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.1 |
| Indianapolis, Ind. | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | .4 | -- | .4 |
| Total | 21.5 | 19.4 | 86.4 | 173.2 | 444.9 | 466.7 | 695.4 | 630.4 | 776.1 | 932.1 | 850.7 | 279.8 | 5377.8 |

1/ Fresh Fruit and Vegetable Unloads, AMS, USDA.

--=No unloads.

Appendix table 2--Variable cost calculations for rail trainload (51-car) shipments from Presque Isle, Maine, to Wilkes-Barre and Philadelphia, Pa., July 1, 1979[1/]

| Line No. | Item | Amount: Region I | Region II[2/] | Average |
|---|---|---|---|---|
| | | ------Cents per hundred pounds------ | | |
| | I--Line Haul | | | |
| 1 | Cost per gross ton-mile | .57954 | .36418 | |
| 2 | Tare weight (tons) | | | 43.7 |
| 3 | Tare-weight expense per car-mile | 25.32590 | 15.91467 | |
| 4 | Freight train supplies running | .72309 | .51813 | |
| 5 | Cost per loaded or empty car-mile | 26.04899 | 16.43280 | |
| 6 | Ratio-total to loaded car-mile (empty return) | X2 | X2 | |
| 7 | Cost per loaded car-mile | 52.09798 | 32.86500 | |
| 8 | Car-hire expense per loaded car-mile[3/] | 5.67 | 5.67 | |
| 9 | Total expenses per loaded car-mile | 57.76798 | 38.53560 | |
| 10 | Lading expense per cwt.-mile | .02898 | .01821 | |
| 11 | Total cost per cwt.-mile | .10119 | .06638 | |
| 12 | Total L. H. cost for: | | | |
| | Mechanicsville[4/] | 58.48782 | | |
| | Wilkes-Barre | | 72.82590 | |
| | Philadelphia | | 82.38462 | |
| | | ----------Dollars---------- | | |
| | II--Terminal Cost | | | |
| 13 | Switching per carload-average | 34.75 | 45.06 | |
| 14 | Switching/carload-adjusted to unit train | 8.69 | 11.26 | |
| 15 | Total carload-switching cost | | | 19.95 |
| 16 | Freight-train car expense | 0 | 0 | |
| 17 | Station-clerical cost-carload | 12.42 | 11.07 | |
| 18 | Station-clerical cost-adjusted to unit-train carload[5/] | | | 8.86 |
| 19 | Special-services expense-per carload | 5.22 | 5.19 | 5.20 |
| 20 | Total terminal costs per cwt. | | | .0425 |
| 21 | Variable terminal cost per cwt. | 0.055 | 0.042 | 0.048 |
| 22 | Total terminal costs/cwt. | | | .0430 |

Footnotes on following page.

Appendix table 2--Variable cost calculations for rail trainload (51-car) shipments from Presque Isle, Maine, to Wilkes-Barre and Philadelphia, Pa., July 1, 1979[1/]--continued

| Line No. | Item | Amount: Region I | Region II[2/] | Average |
|---|---|---|---|---|
| | | ---Dollars--- | | |
| | III--Interchange Switching Costs | | | |
| 23 | Switching expenses, total all cars | 17.38 | 22.98 | |
| 24 | Switching expenses, trainload | 8.69 | 11.49 | |
| 25 | Switching expenses per cwt. | .0108625 | .0143625 | |
| 26 | Total switching cost per cwt. | | | .0343390 |
| | | ---Cents per hundred pounds--- | | |
| | IV--Loss-and-Damage Payments | | | |
| 27 | Potatoes per cwt. | | | 5.662 |
| 28 | Total variable cost per cwt. | | | |
| | 1975 cost level to: Wilkes-Barre | | | 86.39665 |
| | Philadelphia | | | 95.95537 |
| | Updated to July 1, 1979 level[5/] to: | | | |
| | Wilkes-Barre | | | 117.58584 |
| | Philadelphia | | | 130.59526 |

1/ Source: Interstate Commerce Commission's Rail Form A Cost Input Codes and Rail Carload Cost Scales, for through-train movements.

2/ Region I -- New England.
Region II -- Official Territory excluding New England.

3/ Based on $40,000 car value.

4/ Routing miles:

| | | |
|---|---|---|
| Presque Isle to Northern Maine Junction | 178 | BAR |
| Northern Maine Junction to Portland | 130 | MC |
| Portland to Mechanicsville | 270 | B&M |
| Total miles -- Region I | 578 | |
| Mechanicsville to Wilkes-Barre | 216 | D&H |
| Wilkes-Barre to Philadelphia | 144 | D&H |

5/ From "Railroad Cost Scales, 1975" ICC Bureau of Accounts--Statement #1C1-75. Washington, D. C.--updated to September 1979, used 1.361 ratio over the 1975 scales.

Appendix table 3--Fully allocated cost calculations for rail trainload (51-car) shipments from Presque Isle, Maine, to Wilkes-Barre and Philadelphia, Pa., July 1, 1979

| Line No. | Item | Amount | | |
|---|---|---|---|---|
| | | Region I | Region II | Average |
| | | Cents per hundred pounds | | |
| | Constant Cost | | | |
| 1 | L. H. cost/cwt.-mile | .03077 | .01659 | |
| 2 | L. H. cost/cwt.-mile (Mechanicsville) | 17.78506 | | |
| 3 | L. H. cost/cwt.-mile (Wilkes-Barre) | | 3.58344 | |
| 4 | L. H. cost/cwt.-mile (Philadelphia) | | 5.97240 | |
| 5 | Terminal cost/cwt. origin and destination | | | 3.543 |
| 6 | Interchange switching | .104 | .094 | |
| 7 | Total interchange switching | | | .292 |
| | Total Constant Cost/Cwt. | | | |
| 8 | To Wilkes-Barre | | | 25.20350 |
| 9 | Updated to July 1, 1979, levels | | | 34.30196 |
| | Total Constant Cost/Cwt. | | | |
| 10 | To Philadelphia | | | 27.59246 |
| 11 | Updated to July 1, 1979, levels | | | 37.55334 |
| | Fully Allocated Cost | | | |
| 12 | To Wilkes-Barre | | | 151.88780 |
| 13 | To Philadelphia | | | 168.14860 |

Appendix table 4--Method of calculating the cost of TOFC movements[1/] (cost in dollars)

Assumptions:

1. From Presque Isle, Maine, to Boston, Mass. and return
2. Through-train movement
3. Two trailers/flatcar
4. 48,000-pound load
5. 100 percent empty return

| Line No. | Item | Amount |
|---|---|---|
| | Costs to Railroad | |
| | Variable Cost, Line Haul | |
| | Car cost per revenue trailer-mile | |
| 1 | Cost per gross ton-mile--through-train | $0.00788/ton-mile |
| 2 | Tare weight of TOFC car | 33.3 tons |
| 3 | Car-tare weight cost | $0.26237/mile |
| 4 | Car rental cost per car-mile | $0.75693/car-mile |
| 5 | Other car cost per car-mile | $0.157391/car-mile |
| 6 | Total car cost per revenue or nonrevenue car-mile | $0.49545/car-mile |
| 7 | Ratio of total TOFC car-miles to revenue TOFC car-miles | 1.34 car mile |
| 8 | Total car cost per revenue car-mile | $0.66391/car-mile |
| 9 | Total number of revenue trailers per revenue car-mile | 1.807 |
| 10 | Car-mile cost per revenue trailer-mile | $0.36741/car-mile |
| | Trailer cost per revenue trailer-mile | |
| 11 | Tare weight of trailer | 8.4 tons |
| 12 | Trailer-tare weight cost per trailer-mile | $0.06619 |
| | Car-and-trailer cost per shipment-mile | |
| 13 | Total car-and-trailer cost per trailer-mile | $0.43360/trailer-mile |
| 14 | Number of trailers required for shipment | 2 trailers |
| 15 | Car-and-trailer cost per shipment-mile | $0.86720/shipment-mile |
| | Lading cost per shipment-mile | |
| 16 | Total weight of shipment in tons[2/] | 48 tons |
| 17 | Lading cost per shipment-mile | $0.37824/shipment-mile |

See end of table for footnote references. Continued--

Appendix table 4--Method of calculating the cost of TOFC movements[1/] (cost in dollars) --continued

| Line No. | Item | Amount |
|---|---|---|
| | Variable Cost, Line Haul (cont.) | |
| | Total line-haul variable cost per shipment | |
| 18 | Total cost per shipment-mile | $1.24544/shipment-mile |
| 19 | Short-line miles | 443 miles |
| 20 | Circuity factor | .12 |
| 21 | Actual miles of haul | 496 miles |
| 22 | Total line-haul cost per shipment | $617.74/shipment |
| | Variable Terminal Costs | |
| | Switching cost per shipment | |
| 23 | Switching cost per car, origin plus destination | $64.09/car |
| 24 | Switching cost per trailer | $35.47/trailer |
| 25 | Switching cost per shipment, origin plus destination | $70.93/shipment |
| 26 | Station clerical, billing per shipment, origin plus destination | $7.90/shipment |
| | Trailer-terminal cost per shipment at origin and destination | |
| 27 | Tie plus untie cost per trailer, origin plus destination | $100.38/trailer |
| 28 | Special-service cost per trailer, origin plus destination | $1.80/trailer |
| 29 | Total trailer cost per shipment at origin and destination | $204.36/shipment |
| | Terminal-lading cost per shipment | |
| 30 | Terminal-lading cost per cwt., origin plus destination | $0.00372/cwt. |
| 31 | Weight of shipment in cwt. | 960 cwt. |
| 32 | Lading cost per shipment, origin plus destination | $3.56/shipment |
| | Loss-and-damage cost per shipment | |
| 33 | Loss and damage per cwt. | $0.05662/cwt. |
| 34 | Loss and damage per shipment | 54.33/cwt. |

See end of table for footnote references.

Continued--

Appendix table 4--Method of calculating the cost of TOFC movements[1/] (cost in dollars) --continued

| Line No. | Item | Amount |
|---|---|---|
| | Variable Terminal Costs (cont.) | |
| 35 | Total variable-terminal cost per shipment | $341.08/shipment |
| 36 | Total variable cost per shipment, terminal and line haul | $958.81/shipment |
| 37 | Total variable cost per cwt. | $1.00/cwt. |
| | Constant Costs | |
| 38 | Line-haul cost per cwt.-mile | $0.000318/cwt.-mile |
| 39 | Line-haul cost per cwt. | $0.1577/cwt. |
| 40 | Terminal cost per cwt., origin plus destination | $0.05623/cwt. |
| 41 | Total constant cost per cwt. | $0.21393/cwt. |
| 42 | Total constant cost per shipment | $205.37/shipment |
| | Fully Allocated Costs | |
| 43 | Per shipment | $1,164.19/shipment |
| 44 | Per cwt. | $1.21/cwt. |
| | Cost to Railroads--Presque Isle, Maine, to Boston, Mass.--Empty Return | |
| 45 | Line-haul lading cost per shipment-mile[3/] | $0.37824/shipment-mile |
| 46 | Total lading line-haul cost per shipment | $187.60/shipment |
| 47 | Terminal-lading cost per shipment | $3.56/shipment |
| 48 | Loss and damage per shipment | $54.33/shipment |
| 49 | Total costs deducted due to lack of shipment | $245.47/shipment |
| 50 | Fully allocated costs--return trip | $918.72/shipment |
| | Cost to Shippers--Presque Isle, Maine, to Boston, Mass.--Empty Return | |
| 51 | Lease cost per trailer[4/] | $12.26/trailer day |
| 52 | Trailer days for line haul | 5.0 trailer days |
| 53 | Trailer days for terminal operations | 6.5 trailer days |
| 54 | Trailer days for terminal and line haul (round trip)[5/] | 11.5 trailer days |
| 55 | Trailer cost of round trip | $140.99/trailer |
| 56 | Trailer cost per shipment | $281.98/shipment |
| 57 | Pickup and delivery cost per trailer, origin and destination (See item 21G)[6/] | $185.20/trailer |

See end of table for footnote references.

Continued--

Appendix table 4--Method of calculating the cost of TOFC movements1/ (cost in dollars) --continued

| Line No. | Item | Amount |
|---|---|---|
| | Cost to Shippers--Presque Isle, Maine, to Boston, Mass.--Empty Return (cont.) | |
| 58 | Pickup and delivery cost per shipment, origin plus destination | $370.58/shipment |
| 59 | Total costs to shipper for trailer lease, pickup and delivery | $652.56/shipment |
| | Costs of Round-trip Movement--Two Trailers | |
| 60 | Presque Isle to Boston | $1,164.19/shipment (1.21/cwt.) |
| 61 | Boston to Presque Isle | $918.72/shipment (.96/cwt.) |
| 62 | Costs to shipper | $652.56/shipment (.68/cwt.) |
| 63 | Total costs of movement | $2,735.47/shipment |
| 64 | Cost per hundredweight | $2.85/cwt. |

1/ From "Railroad Cost Scales, 1975" ICC Bureau of Accounts--Statement #1C1-75. Washington, D.C.--updated to September 1979 used 1.361 ratio over the 1975 scales.

2/ A 48,000-pound lading weight maximum is imposed to conform with 80,000-pound maximum of States involved with this movement.

3/ All lading and associated costs have been deleted for the return movement. Revenue backhauls would necessitate the inclusion of a portion of these costs.

4/ Lease costs of trailers suitable for TOFC movement are based on information contained in "Piggybacking Fresh Vegetables," Farmer Cooperative Research Report 10, USDA, Eldon Brooks and Robert Byrne, Washington, D. C., May 1979. Cost estimates for leased trailers are based on the leasing company taking the investment tax credit and passing it on in the form of lower payments. Daily cost of trailer lease, trailer and refrigeration maintenance is estimated at $12.26. Sources in the leasing service verify these figures to be accurate. The ICC-cost averages for this cost component are $11.51.

5/ Trailer days for line-haul and terminal operations are based on ICC-computed averages, and estimates by rail officials and shippers.

6/ Pickup and delivery charges are based on ICC-computed averages for various regions of the country. Costs of pickup and delivery at either origin or destination are $92.60 per trailer. Based on the "Fruit and Vegetable Truck Cost Report" for September 1979 (Vol. 1, No. 3), the cost per vehicle-mile is $.832, excluding trailer costs. This would give a vehicle a 55.6-mile radius in which to pick up or deliver cargo. Revenue backhauls may necessitate an increase in costs.

Appendix table 5--Method of calculating the cost of TOFC movements[1/] (cost in dollars)

Assumptions:

1. From Presque Isle, Maine, to Philadelphia, Pa., and return
2. Through-train movement
3. Two trailers/flatcar
4. 48,000-pounds/trailer load
5. 100 percent empty return

| Line No. | Item | Amount |
|---|---|---|
| | Costs to Railroad | |
| | Variable Cost, Line Haul | |
| | Car cost per revenue trailer-mile | |
| 1 | Cost per gross ton-mile--through-train | $0.00697/ton-mile |
| 2 | Tare weight of TOFC car | 33.3 tons |
| 3 | Car-tare weight cost | $0.21191/mile |
| 4 | Car rental cost per car-mile | $0.08583/car-mile |
| 5 | Other car cost per car-mile | $0.14496/car-mile |
| 6 | Total car cost per revenue or nonrevenue car-mile | $0.44270/car-mile |
| 7 | Ratio of total TOFC car-miles to revenue TOFC car-miles | 1.34 |
| 8 | Total car cost per revenue car-mile | $0.59322/car-mile |
| 9 | Total number of revenue trailers per revenue car-mile | 1.80724 |
| 10 | Car-mile cost per revenue trailer-mile | $0.32907/car-mile |
| | Trailer cost per revenue trailer-mile | |
| 11 | Tare weight of trailer | 8.4 tons |
| 12 | Trailer-tare weight cost per trailer-mile | $0.05858/trailer-mile |
| | Car-and-trailer cost per shipment-mile | |
| 13 | Total car-and-trailer cost per trailer-mile | $0.38765/trailer-mile |
| 14 | Number of trailers required for shipment | 2 trailers |
| 15 | Car-and-trailer cost per shipment-mile | $0.7753/shipment-mile |
| 16 | Total weight of shipment in tons[2/] | 48 tons |
| 17 | Lading cost per shipment-mile | $0.33456/shipment-mile |
| | Total line-haul variable cost per shipment | |
| 18 | Total cost per shipment-mile | $1.10996/shipment-mile |

See appendix table 4 for explanation of footnotes. Continued--

Appendix table 5--Method of calculating the cost of TOFC movements[1/] (cost in dollars) --continued

| Line No. | Item | Amount |
|---|---|---|
| | Costs to Railroad (cont.) | |
| | Total line-haul variable cost per shipment (cont.) | |
| 19 | Short-line miles | 644 miles |
| 20 | Circuity factor | .09 |
| 21 | Actual miles of haul | 702 miles |
| 22 | Total line-haul cost per shipment | $849.56/shipment |
| | Variable Terminal Costs | |
| | Switching cost per shipment | |
| 23 | Switching cost per car, origin plus destination | $63.01/car |
| 24 | Switching cost per trailer | $31.51/trailer |
| 25 | Switching cost per shipment, origin plus destination | $63.02/shipment |
| 26 | Station clerical, billing per shipment, origin plus destination | $7.04/shipment |
| | Trailer-terminal cost per shipment at origin and destination | |
| 27 | Tie plus untie cost per trailer, origin plus destination | $99.17/trailer |
| 28 | Special-service cost per trailer, origin plus destination | $1.64/trailer day |
| 29 | Total trailer cost per shipment at origin and destination | $201.62/shipment |
| | Terminal-lading cost per shipment[3/] | |
| 30 | Terminal-lading cost per cwt., origin plus destination | $0.003112/cwt. |
| 31 | Weight of shipment in cwt. | 960 cwt. |
| 32 | Lading cost per shipment, origin plus destination | $2.987/shipment |
| | Loss-and-damage cost per shipment | |
| 33 | Loss and damage per cwt. | $0.0566/cwt. |
| 34 | Loss and damage per shipment | $54.33/shipment |
| 35 | Total variable terminal cost per shipment | $329.00/shipment |
| 36 | Total variable cost per shipment, terminal and line haul | $1,178.56/shipment |

See appendix table 4 for explanation of footnotes.

Continued--

Appendix table 5--Method of calculating the cost of TOFC movements[1/] (cost in dollars) --continued

| Line No. | Item | Amount |
|---|---|---|
| | Variable Terminal Costs (cont.) | |
| 37 | Total variable cost per cwt. | $1.23/cwt. |
| | Constant Costs | |
| 38 | Line-haul cost per cwt.-mile | $0.00043/cwt.-mile |
| 39 | Line-haul cost per cwt. | $0.30003/cwt. |
| 40 | Terminal cost per cwt., origin plus destination | $0.05118/cwt. |
| 41 | Total constant cost per cwt. | $0.35121/cwt. |
| 42 | Total constant cost per shipment | $337.16/shipment |
| | Fully Allocated Costs | |
| 43 | Per shipment | $1,515.72/shipment |
| 44 | Per cwt. | $1.58/cwt. |
| | Cost to Railroads--Presque Isle, Maine, to Philadelphia, Pa.--Empty Return | |
| 45 | Line-haul lading cost per shipment-mile | $0.33456/shipment-mile |
| 46 | Total lading line-haul cost per shipment | $234.86/shipment |
| 47 | Terminal-lading cost per shipment | $2.99/shipment |
| 48 | Loss and damage per shipment | $54.33/shipment |
| 49 | Total costs deducted due to lack of shipment | $292.18/shipment |
| 50 | Fully allocated costs--return trip | $1,223.54/shipment |
| | Cost to Shippers--Presque Isle, Maine, to Philadelphia, Pa., and Return | |
| | Trailer Costs | |
| 51 | Lease cost per trailer[4/] | 12.26/trailer day |
| 52 | Trailer days for line-haul | 7.0/trailer days |
| 53 | Trailer days | 6.5/trailer days |
| 54 | Trailer days for terminal and line haul (round trip)[5/] | 13.5/trailer days |
| 55 | Trailer cost of round trip | $165.60/trailer |
| 56 | Trailer cost per shipment | $331.20/shipment |
| 57 | Pickup and delivery cost per trailer, origin and destination (See item 21G)[6/] | $185.20/trailer |
| 58 | Pickup and delivery cost per shipment, origin plus destination | $370.40/shipment |
| 59 | Total costs to shipper for trailers, pickup and delivery | $701.60/shipment |

See appendix table 4 for explanation of footnotes. Continued--

Appendix table 5--Method of calculating the cost of TOFC movements[1/] (cost in dollars) --continued

| Line No. | Item | Amount |
|---|---|---|
| | Costs of Round-trip Movement--2 trailers | |
| 60 | Presque Isle to Philadelphia | $1,515.72/shipment (1.58/cwt.) |
| 61 | Philadelphia to Presque Isle | $1,223.54/shipment (1.27/cwt.) |
| 62 | Costs to shipper | $701.60/shipment (0.73/cwt.) |
| 63 | Total costs of movement | $3,441.04/shipment |
| 64 | Cost per hundredweight | $3.58/cwt. |

See appendix table 4 for explanation of footnotes.

Appendix table 6--Method of calculating the cost of TOFC movements[1/] (cost in dollars)

Assumptions:

1. From Presque Isle, Maine, to Wilkes-Barre, Pa., and return
2. Unit train, 25 cars--50 trailers
3. 48,000 pounds per trailer load
4. 100 percent empty return

| Line No. | Item | Amount |
|---|---|---|
| | Costs to Railroad | |
| | Variable Cost, Line Haul | |
| | Car cost per revenue trailer-mile | |
| 1 | Cost per gross ton-mile--through-train | $0.00697/ton-mile |
| 2 | Tare weight of TOFC car | 33.3 tons |
| 3 | Car-tare weight cost | $0.21191/mile |
| 4 | Car rental cost per car-mile | $0.08583/car-mile |
| 5 | Other car cost per car-mile | $0.14496/car-mile |
| 6 | Total car cost per revenue car-mile | $0.44270/car-mile |
| 7 | Total number of revenue trailers per revenue car-mile | 2 |
| 8 | Car-mile cost per revenue trailer-mile | $0.22135/car-mile |
| | Trailer cost per revenue trailer-mile | |
| 9 | Tare weight of trailer | 8.4 tons |
| 10 | Trailer-tare weight cost per trailer-mile | $0.05858/trailer-mile |
| | Car-and-trailer cost per shipment-mile | |
| 11 | Total car-and-trailer cost per trailer-mile | $0.27993/trailer-mile |
| 12 | Number of trailers required for shipment | 2 trailers |
| 13 | Car-and-trailer cost per shipment-mile | $0.55986/shipment-mile |
| 14 | Total weight of shipment in tons[2/] | 48 tons |
| 15 | Lading cost per shipment-mile | $0.33456/shipment-mile |
| | Total line-haul variable cost per shipment | |
| 16 | Total cost per shipment-mile | $0.89442/shipment-mile |
| 17 | Actual miles of haul | 794 miles |
| 18 | Total line-haul cost per shipment | $710.16/shipment |

See end of table for footnote references. Continued--

Appendix table 6--Method of calculating the cost of TOFC movements[1/] (cost in dollars) --continued

| Line No. | Item | Amount |
|---|---|---|
| | Variable Terminal Costs | |
| | Switching cost per shipment | |
| 19 | Switching cost per shipment, origin plus destination times 0.5 for unit train | $31.50/car |
| 20 | Station clerical, billing per shipment, ($7.04 x .75) | $5.28 |
| 21 | Tie plus untie cost for trailers per shipment, origin plus destination | $198.34/shipment |
| | Terminal-lading cost per shipment | |
| 22 | Terminal-lading cost per cwt., origin plus destination | $0.003112/cwt. |
| 23 | Weight of shipment in cwt. | 960 cwt. |
| 24 | Lading cost per shipment, origin plus destination | 2.987/cwt./shipment |
| | Loss-and-damage cost per shipment | |
| 25 | Loss and damage per cwt. | $0.0566/cwt. |
| 26 | Loss and damage per shipment | $54.33/shipment |
| 27 | Total variable-terminal cost per shipment | 292.44 |
| 28 | Total variable cost per shipment, terminal and line haul | $1,002.60 |
| 29 | Total variable cost per cwt. | $1.04 |
| | Constant Costs | |
| 30 | Line-haul cost per cwt.-mile | $0.00043/cwt.-mile |
| 31 | Line-haul cost per cwt. | $0.34142/cwt. |
| 32 | Terminal cost per cwt., origin plus destination | $0.05118/cwt. |
| 33 | Total constant cost per cwt. | $0.35121/cwt. |
| 34 | Total constant cost per shipment | $337.16/shipment |
| | Fully Allocated Costs | |
| 35 | Per shipment | $1,339.76/shipment |
| 36 | Per cwt. | $1.39/cwt. |

See end of table for footnote references.

Continued--

Appendix table 6--Method of calculating the cost of TOFC movements[1/] (cost in dollars) --continued

| Line No. | Item | Amount |
|---|---|---|
| | Cost to Railroads--Presque Isle, Maine, to Wilkes-Barre, Pa.--Empty Return | |
| 37 | Line-haul lading cost per shipment-mile[3/] | $0.33456/shipment mile |
| 38 | Total lading line-haul cost per shipment | $265.64/shipment |
| 39 | Terminal-lading cost per shipment | $2.99/shipment |
| 40 | Loss and damage per shipment | $54.33/shipment |
| 41 | Total costs deducted due to lack of shipment | $322.96/shipment |
| 42 | Fully allocated costs--return trip | $1,016.80/shipment |
| 43 | Lease cost per trailer[4/] | $12.26/trailer day |
| 44 | Number of trailers "backing up"--see problem-description move of one trailer | 2.6/trailers |
| 45 | Total number of trailers involved with shipment of one trailer | 3.6/trailers |
| 46 | Lease cost for shipment of one trailer/day | $44.13/day |
| 47 | Trailer days for line haul | 3.5/trailer days |
| 48 | Trailer days for terminal operations | 1/trailer day |
| 49 | Trailer days for terminal and line haul (round trip)[5/] | 4.5/trailer days |
| 50 | Trailer cost of round trip | $198.61/trailer |
| 51 | Trailer cost per shipment | $397.22/shipment |
| 52 | Pickup and delivery cost per trailer, origin and destination, (See item 21G)[6/] | $315.13/trailer |
| 53 | Pickup and delivery cost per shipment, origin plus destination | $631.26/shipment |
| 54 | Total costs to shipper for trailer-lease pickup and delivery | $1,028.48/shipment |
| 55 | Presque Isle to Wilkes-Barre | $1,339.76/shipment ($1.39/cwt.) |
| 56 | Wilkes-Barre to Presque Isle | $1,016.80/shipment ($1.06/cwt.) |
| 57 | Costs to shipper | $1,028.48/shipment ($1.07/cwt.) |
| 58 | Total costs of movement | $3,385.04/shipment |
| 59 | Cost per hundredweight | $3.52/cwt. |

1/ From "Railroad Cost Scales, 1975" ICC Bureau of Accounts--Statement #1C1-75. Washington, D.C.--updated to September 1979, used 1.361 ratio over the 1975 scales.

2/ A 48,000-pound lading weight maximum is imposed to conform with 80,000-pound maximum of States involved with this movement.

3/ All lading and associated costs have been deleted for the return movement. Revenue backhauls would necessitate the inclusion of a portion of these costs.

Appendix table 6 footnotes--continued

4/ Lease cost of trailers suitable for TOFC movement are based on information contained in "Piggybacking Fresh Vegetables," Farmer Cooperative Research Report 10, USDA, Eldon Brooks and Robert Byrne, Washington, D.C., May 1979. Cost estimates for leased trailers are based on the leasing company taking the investment tax credit and passing it on in the form of lower payments. Daily cost of trailer lease, trailer ar refrigeration maintenance is estimated at $12.26. Sources in the leasing service verify these figures to be accurate at the present time. The ICC-cost averages for this cost component are $11.51.

5/ Trailer days for line-haul and terminal operations are estimates by railroads which would be participating in the unit-train movement.

6/ Pickup and delivery charges are based on ICC-computed averages for various regions of the country. Costs of pickup and delivery at either origin or destinatior are $92.60 per trailer. Based on the "Fruit and Vegetable Truck Cost Report" for September 1979 (Vol. 1, No. 3), the cost per vehicle-mile is $.832, excluding trailer costs. This would give a vehicle a 55.6-mile radius in which to pick up or deliver cargo.

The Wilkes-Barre, Pa., unit-train staging area is approximately 134 miles from the major potato-marketing areas. With pickup and delivery charges based on a 55.6-mile radius, the additional 78.4 miles would increase the destination charges by $130.43. Charges at Wilkes-Barre would be $223.03 and $92.60 at Presque Isle, for a total charge of $315.63/per trailer.

## Appendix 7--Options available for obtaining trailers

Three primary options are available for obtaining a fleet of TOFC trailers:

1. Contract or negotiated agreement.

   This would involve a working arrangement with an organization or contractor such as a trucking company, cooperative, railroad, or supplier of railroad equipment who would be willing to purchase or lease trailers for an assured return on its investment. Advantages of this type of arrangement would be the built-in professional management and established trailer-tracking system of the contractor. It also would relieve the shippers of the need for expediters and freight solicitors to arrange backhauls and rapid return of the trailers. In addition, it would eliminate the need for large capital investment.

   A disadvantage would be the added expense of providing the contractor with a reasonable return on his investment. However, in the long run this may be less expensive than it would initially appear since a good established tracking system and a professional management team could reduce equipment requirements to a minimum.

2. Direct purchase.

   Assuming all economies of scale are equal for volume purchasing, and ample financing is available at reasonable rates, it is usually better from an economic standpoint to buy trailers than lease them. The reason is simple--the lessor must include a profit margin on his lease rates and that profit margin is additional cost that the lessee would not incur if he owned, rather than leased, the trailers.

   Disadvantages would include:

   Obtaining and tying up the capital needed for trailer purchase.

   Possibility of equipment obsolescence.

   Responsibility for major repairs and maintenance.

3. Leasing.

   Any organization must watch its cash position, and leasing in one way to preserve cash for other revenue-generating activities.

   Other leasing advantages include:

   a. Investment tax credit (ITC) fruit and vegetable marketing--cooperatives normally do not generate "net income"; therefore, they are unable to utilize fully the 10-percent ITC. It can be arranged for the leasing company to take the ITC, then pass it on in the form of lower lease rates.

   b. Budgeting strategy is simpler in that cash flow is fixed with no abrupt replacement costs to ruin projected budgets.

   c. Nationwide maintenance programs are offered by some leasing companies that provide repair and/or replacement services in all major U.S. cities.

   d. Volume purchasing and disposal of used equipment usually can be handled better through a leasing company that is set up to take advantage of market changes.

   Comparative costs of leasing versus buying perhaps can be determined best by a present-value cash flow analysis.

To illustrate the use of present-value cash flows in the decisionmaking process, consider a hypothetical situation. Cash outflow of our alternatives happens at different times over the life of the trailers, thus making it necessary to utilize present value. The example analysis shows the present value of a $120,000 trailer investment utilizing equity financing (table 1), debt financing (table 2), and lease financing (table 3). The assumptions are that there is a 10-percent discount rate, a 5-year projected life, a 7-percent prime rate (cost of debt), and cash receipts and expenses are equivalent for all the alternatives. No consideration was given to ITC, and it was assumed that buying power would be roughly equivalent.

The result of present-value cash outflow shows that debt financing is the least costly alternative, lease financing next, and equity financing the most expensive. These calculations show the strictly quantitative side of the lease-or-buy decision.

Leasing in general costs a little more. However, if a lease is carefully selected and tailored to need, the additional cost will buy an equivalent value in improved cash flow, debt equity ratio, or in a nationwide maintenance program.

Types and Sizes of Trailers

Determining which trailer size to recommend is particularly difficult. Of concern is the height of the trailer. Input from larger receivers and others with experience in unitized handling systems strongly indicates future shipping programs will count heavily on handling efficiencies of unit loading and unloading with 40" x 48" (102 x 122 cm.) slipsheets.

To mechanically load and unload, a trailer height of 13 feet 6 inches is desirable. Anything less than this will cut down on the available cubic volume of the trailer, and also subject the roof to possible damage from the masts of the lift trucks while loading and unloading. This also will require trailer doors that open flush with the inside width and height of the door opening.

The problem with the 13-foot 6-inch trailers is that there are many areas in the East where overhead clearance is insufficient. Chicago has several overpasses too low; the same is true of metropolitan New York, Philadelphia, and Baltimore, including the Baltimore Tunnel.

Despite these problems, the benefits to be gained from using the higher cube trailers, both on the primary and backhaul, more than offset the problems that will be created. Working with reliable truckers on local deliveries who will select routes to avoid low overpasses will greatly reduce the danger of damaging the trailers.

The length of the trailer must be considered when a high cube trailer that can be mechanically unloaded and loaded is required. A 40-foot trailer, for example, can take only 18 of the commonly used 40"x48" pallet units if loaded mechanically with a straight-in pattern. In addition, it requires bracing or blocking by hand. A 42-foot trailer, on the other hand, provides enough extra length to take a full 20-pallet load and does not require hand blocking. This extra cube capacity is desirable if the trailers are loaded with a backhaul.

Discussions with freight forwarders and other potential users of trailers indicated that rental agreements and freight tariffs favor heavier loads. Therefore, the 40-foot refrigerated trailers with lower cubes are used only when none of the higher cube general-purpose trailers are available.

The problem with 42-foot refrigerated trailers, however, is loading them on flatcars. The standard flatcar is designed to take two 40-foot trailers with nose-mount refrigeration units.

Appendix 7--(continued)

Table 1--Ownership present-value cash flow utilizing equity

| Item | Present value | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|---|
| Purchase | | | | | | |
| Profit on sale 1/ | -$120,000 | | | | | $24,000 |
| 10% present-value discount | | | | | | .620 |
| Present value | -$120,000 | | | | | $14,880 |
| Total cash outflow | | | | | | -$96,000 |
| Present value of cash outflow | | | | | | -$105,120 |

1/ Estimated at 20 percent.

Note: Investment--$120,000.
60-month life--no book residual.
Tax-exempt cooperative.
All funds paid or received at end of year.
Outright purchase--no financing (equity financing).

Table 2--Ownership present-value cash flow utilizing debt

| Item | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|
| Debt retirement | -$24,000 | -$24,000 | -$24,000 | -$24,000 | -$24,000 |
| Interest | -10,500 | -8,400 | -6,300 | -4,200 | -2,100 |
| Profit on sale 1/ | | | | | 24,000 |
| Annual cash outflow | -$34,500 | -$32,400 | -$30,300 | -$28,200 | - $2,100 |
| 10% present-value discount | .909 | .826 | .751 | .683 | .620 |
| Present value | -$31,360 | -$26,762 | -$22,755 | -$19,261 | - $1,302 |
| Total cash outflow | | | | | -$127,500 |
| Present value of cash outflow | | | | | -$101,440 |

1/ Estimated at 20 percent.

Note: Purchase--financed at 7 percent with 20-percent compensating balance. Effective interest rate--8.75 percent. Principal amortized 20 percent annually.

Appendix 7--(continued)

Table 3--Lease present-value cash flow analysis

| Item | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|
| Lease cost | -$35,006 | -$32,875 | -$30,686 | -$28,512 | -$25,920 |
| Less: Profit on sale[1/] | | | | | 24,000 |
| Annual cash outflow | -$35,006 | -$32,875 | -$30,686 | -$28,512 | -$1,920 |
| 10% present-value discount | .909 | .826 | .751 | .683 | .620 |
| Present value | -$31,820 | -$27,155 | -$23,045 | -$19,474 | -$1,190 |
| Total cash outflow | | | | | -$128,999 |
| Present value of cash outflow | | | | | -$102,684 |

1/ Estimated at 20 percent.

Note: Cost of equipment--$120,000.
60-month lease.
Lease cost based on 7-percent prime rate.
All funds paid or received at end of year.
Present value of 60-month lease on $120,000 equipment value with 20-percent recovery on original investment.

By modifying the flatcars and relocating the stanchions, a trailer up to 45 feet can be loaded in combination with one 40-foot trailer.

In most of the larger shipping centers there are enough 40-foot trailers moving to facilitate prompt loading of a combination of 40-foot trailers with 42- or 45-foot trailers. Therefore, combining different trailers in the East for the southbound move poses no significant problem.

Based on the difficulties of matching two trailer sizes on each flatcar and the scarcity of flatcars that have been converted to handle the trailers, using 40-foot trailers for a Plan III piggyback program is recommended. Experimental trips could be made mixing 42½- and 40-foot trailers to see if there were operating problems. The ideal trailer for existing flatcars would have a minimum inside length of 40 feet 11 inches. It would allow the full 20-unit loading pattern and still fit 2 trailers on a car.

There are problems with nose-mount units in piggyback service. In transit, the airflow goes over the top of the first trailer, bypassing the cooling unit of the second trailer, thus reducing its cooling capability. With the nose mount there is also the possibility of trailers being parked nose-to-nose at rail-loading ramps. The units then may overheat as hot exhaust air from one unit is blown into the other. Also, if the trailers are parked at ramps with the front of one trailer near the tail of another, the nose-mount unit can be damaged when the front trailer is raised and hooked to the tractor. Based on the preceding comments and the extensive operating experience of Fruit Growers Express, we recommend use of belly-mount refrigeration units with fueling capability from either side.

Concerning the standard airflow refrigeration unit versus the reverse airflow system, we recommend the latter. With standard airflow, cold air is blown over the top of the load and cools it while circulating downward. After reaching the floor, the return air passes the temperature sensor on its way back to the cooling unit.

During the operating cycle, if the temperature sensor on the air return indicates the load should be cooled down, the compressor starts the cooling cycle. The top half of the load then may be cooled below the specified temperature, even to the point of freezing, while the warmer bottom half of the load would cause the air-return sensor to continue the cooling cycle. By the time the air-return sensor indicates a temperature low enough to shut down the cooling cycle, excess cooling of the top half of the load may cause the heating cycle to come on, causing wide swings in temperature.

With a reverse or bottom airflow system the fan is reversed and the return air comes in from the top of the load past the cooler unit, then past the temperature sensor, and on through the load by way of the floor. Temperature always is measured after the air passes the cooling and heating units and before it reaches the load. By sensing airflow temperature before it reaches the load, the possibility of overcooling (freezing) or overheating is virtually eliminated.

## Comparative Trailer Cost

Price quotations on purchasing or leasing trailers were obtained from four major leasing companies and manufacturers. In general, the prices quoted below are given as a range only, since each manufacturer has his own package that he feels is best suited for the service.

Price of a trailer ranging from 13 feet to 13 feet 6 inches in height and 41 feet 9 inches to 43 feet in length, with a belly-mount unit, will vary from $24,357 to $27,550. Prices in most cases were in effect as of June 1978. Variation in prices is due largely to construction and equipment differences among the trailers.

Principal equipment variations that affect price include: type of refrigeration unit, trailer dimensions, type of floor and lining, and type and amount of insulation.

Trailer Refrigeration Equipment

For trailer refrigeration equipment, there are two options from which to select. These options are the nose-mount and the belly-mount compressor units.[1/] Additionally one can choose between a standard and a reverse airflow system. The following list of advantages and disadvantages given for nose-mount and belly-mount units is based on information obtained from receivers, railroads, trailer owners, and other users.

Nose Mount

Advantages

--Better resale value.
--Above dirt, ice, and rocks thrown up by wheels during highway use.
--Fewer moving parts.

Disadvantages

--Inefficient cooling on flatcar while enroute.
--More difficult to inspect while on flatcars.
--Susceptible to damage during terminal operations.

Belly Mount

--Easier to work on.
--Provides for more inside loading area.
--Less chance of overheating during terminal operations.

--Approximately 600 pounds heavier.
--Longer cooling and electrical connecting lines.
--Approximately $1,500 more expensive than nose-mount unit.

Selecting the unit--for highway movement we would recommend the nose-mount refrigeration unit, as it avoids problems encountered by the belly-mount unit of dirt, ice, and rocks being thrown from the road into the unit. This is not a problem in a TOFC program.

Advantages of the belly-mount are: (a) Easier maintenance and inspection, particularly aboard a flatcar; (b) higher inside cube available; and (c) better cooling capability.

Prices have been going up rapidly, and with one company there have been at least two increases since the first of the year. Firm prices cannot be determined without a specific negotiation on a fixed package with a delivery date determined. Some manufacturers now are quoting for fourth quarter or later delivery.

Lease cost of trailers ranges from $226 a month for a 10-year lease to $291.95 for an 8-year lease. Lease quotations are based on the leasing company taking the investment tax credit and passing it on in the form of lower payments. Again, the actual lease should be negotiated based on a specific package. The package would include not only equipment specifications, but also such things as financial responsibility of the lessee and trial periods to test the program and/or escape clauses.

1/ Nose-mount refrigeration unit is located on the outside, upper front of the trailer. Belly-mount refrigeration unit is located on the outside, bottom of the trailer.

## Trailer Maintenance

A full maintenance program contract including tires (not including refrigeration equipment) would cost about $52 per month for a maximum of 5,000 miles per year.

A refrigeration-unit maintenance program can be obtained for $0.48 an operating hour. Based on a one-way haul from Salinas to Chicago with the unit operating 40 percent of the time, and a 21-day turnaround, the cost would average about $15 a trip, or $20 to $25 per month depending on turnaround time. The total maintenance program, if contracted out, would be $72 a month for each trailer.

Fruit Growers Express, with its large fleet, found that under normal conditions each of its maintenance men can pretrip about 10 trailers a day including the belly-mount refrigeration units. If other services are to be performed, they require additional time.

A 1,200-hour check, for instance, will take 20 to 30 hours and calibrating a thermostat will take 1½ hours each. However, if two or more units are parked side-by-side, the calibration may run concurrently. Replacing or repairing tires, changing oil, and washing also require additional time.

One of the most important items in any TOFC program for produce is a sound maintenance program. For the refrigeration units to function properly they must be maintained and kept clean. If the coils and/or condenser are dirty they lose their efficiency and trouble will result.

## Appendix 8--Capital and equity cost factors

--Recovery of capital costs: 87 percent of vessel construction cost.

Annual cost of capital recovery (ACCR); CRF=.1039.

Interest rate of 9-3/4 percent per year, including 3/4 percent for Title XI.

Ship financing guarantee over a 25-year period.

Daily cost: divide by 365 days.

--After tax return on equity: equity assumed at 12½ percent of vessel construction cost.

Interest rate of 10 percent per year; CRF=.17494.

Daily cost: divide by 365 days.

Appendix 9--Trailer characteristics

Type: Refrigerated
Length: 40 feet
Width: 8 feet
Height: 12.6 feet
Net weight: 42,000 pounds
Tare: 16,100 pounds
Gross weight: 58,100 pounds
Leasing cost/day: $15

# Fruit and Vegetable Truck Cost Report
## For SEPTEMBER 1979

United States Department of Agriculture
Office of Transportation
Room 1405, Auditors Building
Washington, D.C. 20250
(202) 447-4502

Vol. 1, No. 2 September 4, 1979

Truck cost per vehicle mile and various cost components are available by mail or phone after the first Monday of each month from the address above. Cost information is estimated for a combination fleet of 10 trucks operating on one-way trips of 2,500 miles, returning loaded on three-fourths of all return trip miles, operating 131,000 miles per truck per year on the average, and using two-person driving teams. One-truck owner-operators have similar costs, except for drivers' wages. Estimates are based on costs and data developed in 1976 from a survey of 9 truckers of fresh fruits and vegetables in California, Florida, and Texas. The 1976 costs have been updated using prices indexes and other data from Bureau of Labor Statistics, interest rates from Federal Reserve Board, and diesel fuel prices from Interstate Commerce Commission. Axle-mile and similar taxes that apply only in some States are not included. 1/

| Cost items | 1976 | March 1979 | July 1979 | August 1979 |
|---|---|---|---|---|
| | | Cents per vehicle mile | | |
| **Fixed cost** | | | | |
| Interest on tractor & trailer | 2.7 | 4.4 | 4.4 | 4.4 |
| Deprec. & interest on other items | .6 | .8 | .8 | .8 |
| Management & overhead | 4.0 | 4.8 | 4.8 | 4.8 |
| Insurance | 2.5 | 3.0 | 3.0 | 3.0 |
| Licenses | .8 | .9 | .9 | .9 |
| **Variable Cost** | | | | |
| Vehicle depreciation cost | 6.7 | 9.0 | 9.0 | 9.0 |
| Driver cost | 19.0 | 25.0 | 25.0 | 25.0 |
| Operating cost | | | | |
| Fuel | 11.6 | 15.3 | 19.8 | 22.0 |
| Maintenance | 6.3 | 7.7 | 7.7 | 7.7 |
| Tires | 2.0 | 2.4 | 2.4 | 2.4 |
| Maintenance | 2.4 | 3.0 | 3.3 | 3.4 |
| Total cost | 58.6 | 76.3 | 81.1 | 83.4 |

1/ These estimates were prepared by Patrick P. Boles, Economics, Statistics, and Cooperatives Service, USDA, in collaboration with the Office of Transportation. For details, write or call Office of Transportation, USDA. Washington, D. C. 20250; phone (202) 447-7690 or (202) 447-6363.

### TELEPHONE SERVICE

Current truck cost will be available by phone at the following USDA Fruit and Vegetable Market News Offices following the release of the report after the first Monday of each month.